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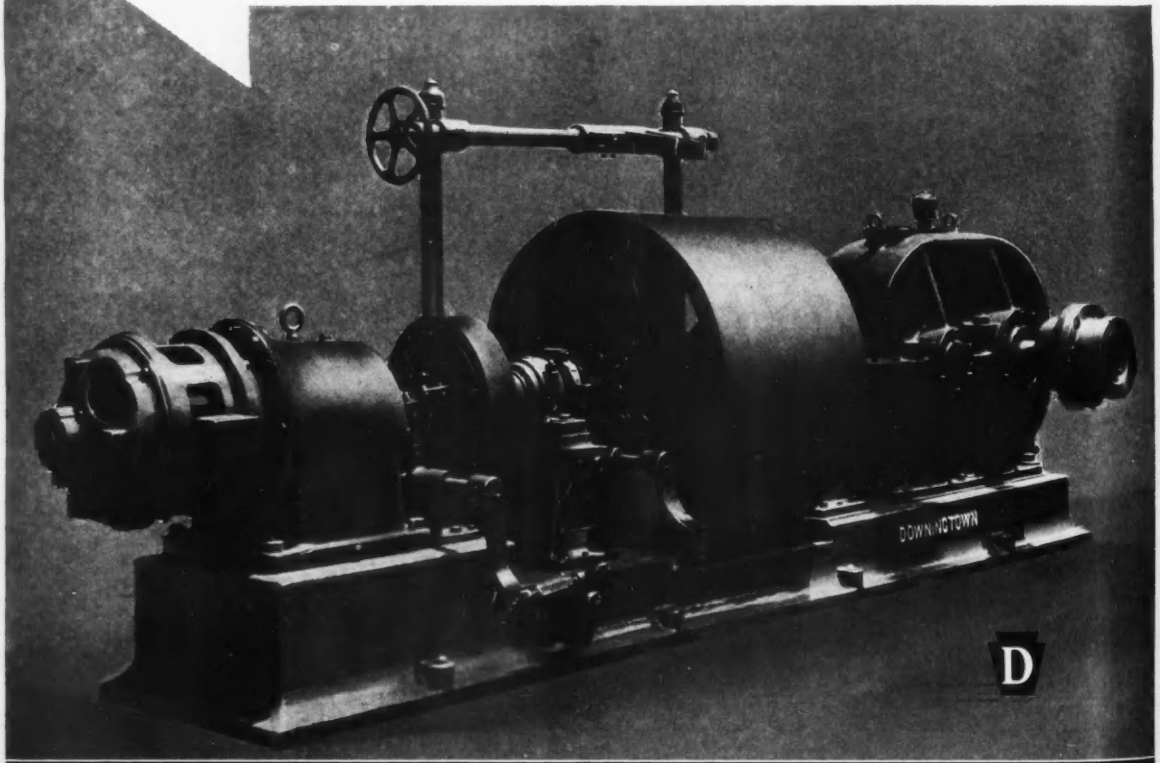

DOWNINGTOWN MANUFACTURING CO., DOWNINGTOWN, PA.

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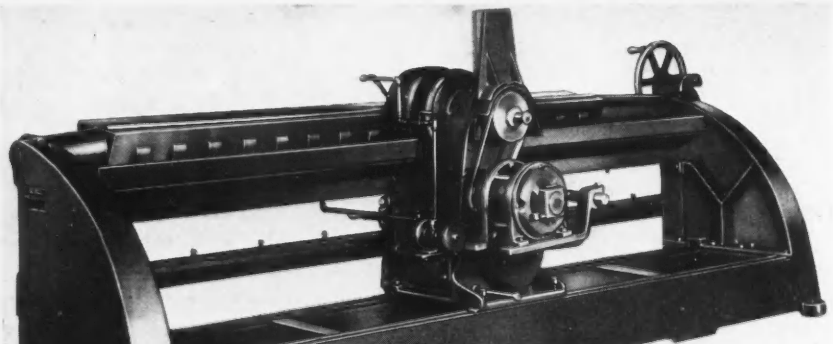
THE KEY TO *Accurate Cutting*- *. . Knives Precision Ground on a Seybold*



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Newsprint Mills Cheered by Rising Demand

Canada Manufacturers Encouraged As Upturn In United States Increases Shipments of Newsprint To Highest Level of Year and Prices Remain Stable — Woods Inventory Urged By K. Smith of Pejepscot Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 14, 1938.—The year is closing with a distinctly brighter outlook in the newsprint industry and there are those who go so far as to say that when the annual reports of the various companies on the year's operations come to be written the operators as a whole will be able to say that at long last newsprint mills have been brought back to a point where production is on a profitable basis. There are three reasons for this cheerful view. They are:

(1.) The upturn in business in the United States which is already being reflected in increased consumption of newsprint. In October, according to the Canadian Newsprint Association, production and shipments of newsprint continue to rise seasonably to the highest levels of the year, the shipments to the United States being 198,889 tons, an increase of 27,133 tons over those for September, although 28.8% below last year; and shipments overseas amounting to 42,058 tons, as compared with 39,900 tons in October last year.

(2.) The fact that the trying times through which the industry has been passing have not resulted in the devil-take-the-hindmost stampede to cut-rate competition which in former years resulted in general bankruptcy for newsprint concerns.

(3.) The fact that maintenance of the general price level of the past year, based on $50 a ton, seems assured for 1939.

The industry is not unaware of the fact that the newspaper committee of the American Newspaper Publisher's Association has issued a letter urging newsprint buyers to accept contracts only at the lowest price offered in the industry, but companies controlling most of the productive capacity on the continent have quickly followed the lead of International Paper in announcing a $50 price for 1939, and only a relatively few are quoting the $48 price which the Great Northern Paper Company announced it would adhere to. According to the A.N.P.A. circular the Maine Seaboard Paper Company, the Algonquin Paper Corporation and the Gould Paper Company are following Great Northern's example in quoting $48, but in Canada besides the International, Consolidated Paper Company and Price Brothers—these three controlling more than half the production in Canada, have already quoted $50 as their price for 1939.

Woods Inventory Urged

K. Smith, of the Pejepscot Paper Company, Maine, in an address in Saint John, N. B., has urged a businesslike inventory of the forest situation with a view to conserving timber resources. He said Canada had reached a stage where restricted and scientific management of forests was imperative.

Our supplies of merchantable timber are becoming more and more remote, he said; logging, particularly transportation costs, are mounting, industries are moving after the receding timber, or carrying on under increasing difficulties, while large areas of the most accessible lands have been depleted of their valuable species of merchantable sizes and often more or less abandoned to an uncertain fate.

Large Amount of Timber Inaccessible

Pointing out that of Canada's total timber stand 38 per cent was estimated as inaccessible, he said, "we need a complete inventory of our forests with a balance sheet showing the capital assets," the income through growth and the depletion through cutting, fire, insects, etc." With this in hand, he said, we shall be able to plan the perpetuation of our forest resources and see just how far we should go with restrictive measures as a means to this end.

As an essential means, he urged the necessity for the establishment of a number of demonstration plots in various types and ages of forests where different methods of sylviculture would be demonstrated and local effects noticed. He said the Dominion Forest Service has made a fine start with this at the Acadia Forest Experiment Station at Fredericton, N.B., and at some other areas in the province. "We have," he added, "several such plots at the Pejepscot Paper Company lands in Saint John and King's Counties but there are a great many more needed before they will benefit the small landowners."

National Tag Installs New Equipment

CAMBRIDGE, Mass., November 14, 1938.—The National Tag and Label Corporation has installed several new high speed Multi-Process tag machines and slitting equipment. The executives report a comfortable increase in sales for 1938 over 1937, probably due to the concern's prompt delivery system.

Drastic Reductions on Sulphite Bond Papers

Substantial Lowering of Prices On All Grades of Sulphite Bond Papers Regarded In Middle West As Too Low For Fair Profits — Other Grades of Paper Remain Firm—President Cobean Issues An Instructive Letter.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., November 14, 1938—The hard to define break in the sulphite bond market continues to be the major topic of discussion in most Chicago paper circles this week. All grades of sulphite bonds from number 1 on down were reduced, according to reports, from $5 to $10. The break is so drastic that local commentators do not expect prices to remain at that figure out of sheer regard for the tremendous financial losses such a continuation would bring. Meanwhile, this news had little effect on other markets though kraft executives here were as perplexed over the comparative steadiness of that market as they have been pleased over the way in which consumption has been absorbing increased production—even to the 90 per cent figure. There continues to be a belief in many quarters that the industry in general is far too concerned with production methods and not sufficiently concerned with merchandising. Less emphasis on production and more on profitable distribution is considered the viewpoint of some members of the industry who actually feel the industry to be lacking in "fundamental economic wisdom".

Outside the sulphite market, and the situation which has confronted the kraft industry for months, even with expanding demand, the book and cover markets gave a good account of themselves while rag bonds, in contrast to sulphites, had a fairly good week, according to reports. Groundwoods and newsprints were in a comparatively healthy state while the waste market, likewise, was continued firm.

More Efficient Merchandising Needed

The paradoxical condition of an industry enjoying better demand and general healthiness in the midst of a more or less profitless production continues to be the source of concern to local executives interviewed. There remains, too, the economic and social problem arising from losses incurred through profitless selling which can only result in lower wages, already a factor in some lines, and an unenviable distortion of employee relations conditions. It is these factors which are worrying local executives who have expressed the belief, in some quarters, that the industry cannot expect freedom from government interference and regulation if it is utterly unable to regulate conditions of its own volition. The year 1939 is expected to be satisfactory, speaking from the standpoint of general business. On this account, if for no other reason, local representatives of the industry, are hoping that much more attention will be given in the future to proper merchandising methods and less to the production angle.

Midwest Board Executives in New York

A general exodus of paper board executives is being witnessed this week as the National Paperboard Association prepares to open its annual sessions at the Waldorf-Astoria in New York City on November 16 and 17. President Henry D. Schmidt has arranged an excellent program including reports by S. M. Phelan, vice president, and various committee statements. The Association will also elect officers for the coming year and will develop a program of activities with an eye on various governmental stipulations now confronting the ranks of employers the country over.

President Cobean's Instructive Letter

Obviously having in mind the provisions of the Social Security Act and the sections of state unemployment insurance laws providing for merit rating, George G. Cobean, president of the National Paper Trade Association, has issued a call to the industry to give immediate consideration to the possibilities of taking up the slack of unemployment. Mr. Cobean, an executive of the Butler Paper interests, must have had in mind the provisions of the Illinois statutes which inflict a penalty on employers with a bad merit rating yet which reward them, even to the point of assessing no tax at all in the case of a perfect employment record. However, it is obvious that the practical paper executive is also asking the paper industry, through the association, to go even more deeply into the subject and to "be responsible for bringing about such conditions which will be conducive to free enterprise, free government and free living". Mr. Cobean's communication which, to many, is one of the outstanding pleas for constructive thinking, obviously contains the thought that it would be far less expensive for the paper industry to solve its own problems than to permit the government to pursue such "relief" and "regulation" in a costly manner. He considers such a procedure by governmental agencies as an indication that some have judged the trade associations and found them wanting and that the paper industry, among others, must give a great deal of immediate thinking to the problem of placing the industry "on a more prosperous economic level". The letter which circulated throughout the country, was forwarded through A. H. Chamberlain, secretary of the N.P.T.A.

Hour Law Forces Saturday Closing

Beginning last Saturday, November 5, a large number of well known fine paper houses, fourteen in number, were reported to have closed their offices and warehouses and to continue Saturday closings for an indeterminate period. The fourteen firms include most of Chicago owned firms although several smaller competing firms and others owned by out-of-town interests are continuing to work the Saturday half day. As far as can be determined, the motivating factor behind the unusual move is the new Federal Fair Labor Standards Act where the maximum hour provisions, in particular, are making it almost impossible to run the full week without costly results. How far the action will spread will be interesting to note. It may be, actually, that the

Chicago firms are simply beating the proposed five day week for Illinois to the starter's gun.

Brower Company Expands

Although only about four years old in the actual merchandising business, the Brower Paper Company has already announced a vigorous expansion program which has already included the purchase of three buildings on Racine Avenue in Chicago which will make possible a comprehensive development for the future. The buildings provide a railroad siding to permit direct connections without the use of trucks to haul merchandise and also afford a total space of 165,000 square feet available though not all of this will be utilized immediately.

Sacandaga Reservoir Lessens Damage

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., November 7, 1938—The Hudson River Regulating Board is receiving much commendation for its recent construction of the huge Sacandaga Reservoir at an estimated cost of $12,000,000. It is estimated that the reservoir has increased the continuous or primary power at the various paper mills and water power plants, already constructed, from 34,000 to 135,000 horse power besides almost entirely eliminating unemployment because of lack of water for operating purposes. Not so many years ago when hydro-electric plants were forced to run at a fractional part of their capacity because of lack of water the industries dependent on that power were forced to shut down. Today, however, large steam plants are tied into the hydro-electric plants so that business outside of the paper mills is generally not interrupted. However, the benefit of storage in this instance is the value of the coal saved and the regulation of stream flow effected by the Sacandaga Reservoir alone is the equivalent of over 400,000 tons of coal a year. Damage to paper mills and other industries by floods has also been lessened by the huge reservoir.

The cost of construction and operation of the gigantic Sacandaga Reservoir is being paid for by assessments yearly upon the various beneficiaries. Among the concerns levied with yearly assessments are the West Virginia Pulp and Paper Company, New York Power and Light Company, Wood-Flong Corporation, Adirondack Realty Holding Company, Ford Motor Company, United Paper Board Company, Fort Miller Pulp and Paper Company, Union Bag and Paper Company, and the International Paper Company.

Boston Paper Trade to Meet

BOSTON, Mass., November 7, 1938—Commander Donald B. MacMillan is to be the speaker at the fall meeting of the Boston Paper Trade Association, to be held November 16 at the Exchange Club. His subject will be "Finding Records in the Far North." The membership committee have approved the following applications for membership: Henry Curtis, Curtis 1000, Inc., Hartford, Conn., proposed by J. H. Brewer; Russell H. Madden, American Writing Paper Corporation, Holyoke, Mass., proposed by Norman Harrower, and Floyd H. Blackman, D. F. Munroe Company, Boston, proposed by Robert M. Stone.

May Erect Pulp Mill at Duncan Bay

VANCOUVER, B. C., November 14, 1938.—Erection of a large pulp mill at Duncan Bay, Vancouver Island, is proposed by the Deep River Development Corporation. Formal application for the right to harness Campbell River power has already been made by the company to the provincial water authorities at Victoria, B. C., and will be officially heard by the water board during the end of November. The company has also filed an application with the government for the right to purchase land for a power site on Campbell River just below Elk Falls. Backed by United States capital, the company proposes to erect a dam to control the level of the lower Campbell River.

The company proposes to produce rayon pulp in the new plant. One of the factors that will have to be considered is the effect of the power development on the run of salmon on the lower Campbell River which is one of the outstanding sports fishing rivers on the entire Pacific Coast.

For thirty years, off and on, various companies have struggled for control of the huge Campbell River powers. At the moment they are held by the B. C. Electric Railway Company, but the government has a definite understanding with it that if any other concern wants to use the power it must go ahead with development itself or withdraw altogether. The powers can not be held indefinitely idle, if anyone is prepared to harness them.

For this reason the Deep River concern can probably get the power if it demonstrates its ability to establish a big industry. It must prove to the water board, of course, its financial backing. Its application for land and power will be heard at the same time after the month's legal period of advertising.

The provincial authorities are particularly interested in this project as they have been assured by their experts that the future of the timber industry must be more and more in pulped products which can be made from small and inferior trees.

Hawthorne Installs Pattilloch System

KALAMAZOO, Mich., November 14, 1938. — The Pattilloch process of chemical hydration and acidity control is being installed in the plant of the Hawthorne Paper Company, Kalamazoo, Mich. Although the process is being used in two other fine paper mills this installation at the Hawthorne mill is said to be the most complete.

The system is known as the Pattilloch process, and is the product of 12 years of work by D. K. Pattilloch, who has been in Kalamazoo during the installation. The local plant has been licensed to use the patents obtained by Pattilloch covering his process, and is making a line of paper which it designates as "Durabilt."

George H. Gerpheide is president of the company, having assumed the post after the death of A. H. Dwight in 1926. The plant has made progress under Mr. Gerpheide's administration, and has won a wide reputation in its specialties, one of which is the handling of tough jobs in watermarked papers. It is a well equipped plant for the special line it serves, having two Fourdrinier machines, with auxiliary equipment of eight 1,200-pound beaters, two refiners, five washers and two rotaries.

University Working on New Milk Container

Package Now Being Developed From Virgin Pulp As University of Wisconsin Hopes To Perfect New Paper Milk Package For Dairy Industry —Manufacturers Association Holds Annual Meeting—Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 14, 1938.—Working to perfect paper milk containers, the University of Wisconsin hopes to develop a product that can be added to the specialty lines manufactured in Wisconsin on a basis that will develop general usage in place of the expensive glass bottle. The project is being handled by K. G. Weckel, of the dairy industries department of the university.

Mr. Weckel finds that use of the paper container has been discouraged because of relatively high costs of manufacture, and the difficulty of producing one free from bacteria.

Packages are now being developed from virgin pulp, held together by adhesive cements highly resistant to solutions and to bacterial growth. They are strong, rigid and waterproof, and are almost completely sterilized with a coat of hot paraffin.

Use of the paper containers, Mr. Weckel points out, will eliminate the loss of so many bottles to the consumer and will mean the elimination of expensive washing equipment. Refrigeration costs will be reduced, as well as shipping and trucking weight.

A process of homogenization is also being developed which will disperse the fat mechanically through the milk in very small globules which will prevent a separation of cream and milk. The cream line by which the consumer judges the quality of milk in a glass bottle will thus be eliminated, doing away with that objection to the paper container. State milk dealers are looking with favor on the entire project.

University Ready to Cooperate with Industry

Paper manufacturers have been notified by President C. A. Dykstra that the facilities of the University of Wisconsin are available in solving individual technical and research problems. A new industrial survey is to be inaugurated to discover research possibilities in the industries of the state. It will be under the direction of Dr. James B. Friauf, physicist and engineer, who has joined the university's engineering staff. The survey is designed to increase the university's services and scientific contribution to state industry.

"An actual experience in investigating practical problems and in research is necessary in a first-class engineering college, both to stimulate the faculty and to train suitably gifted students for research in industry," said President Dykstra in his letter. The problems will be turned over to the college of engineering as submitted.

Annual Meeting of Manufacturers Association

Joseph M. Conway, president and general manager of the Hoberg Paper Mills, Inc., Green Bay, Wis., will preside at the twenty-seventh annual meeting of the Wisconsin Manufacturers Association at Hotel Pfister, Milwaukee, Wis., November 17 and 18. He is president of the association.

Questions on the new wage and hour law will be handled by Harold W. Story, vice-president of Allis-Chalmers Manufacturing Company, Milwaukee, and there will also be discussion on changes in the Wisconsin unemployment compensation law.

Management training is the topic to be handled by C. S. Craigmile, vice-president of the Belden Company, Chicago. A discussion on industry and government will be conducted by William F. Ashe, director of the Wisconsin Department of Commerce, and former personnel director of the Thilmany Pulp and Paper Company, Kaukauna, Wis.

The speaker at the convention banquet will be B. C. Heacock, president of the Caterpillar Tractor Company, Peoria, Ill. His subject will be "Industry and the Public." Mr. Heacock is president of the Illinois Manufacturers Association. "Fundamentals of a Sound Employment Policy" will be presented by Homer D. Sayre, commissioner of the National Metal Trades Association.

To Clear Fox River of Pollution

Renewed efforts will be made by the State Bureau of Sanitary Engineering, Madison, Wis., to clear the Fox River of all pollution, according to L. F. Warrick, chief sanitary engineer. Two special representatives of his department, Ben L. Williamson, biologist, and John T. Greenback, engineer, will make tests of the water quality, bottom deposits and gasses in the period remaining before the river freezes up for the winter. Their work will be concentrated at the mouth of the Fox River at Green Bay, Wis., where the pollution is especially pronounced. Out of these studies, the bureau hopes to ascertain fundamental causes of the condition and suggest remedies. Paper mills have been cooperating in previous projects in the hope of finding methods which will minimize pollution by mill wastes.

Kimberly-Clark Engineers Meet

Eighty attended a dinner of the Kimberly-Clark Engineers Club at Hotel Appleton, Appleton, Wis., November 9. George Spaulding, president, was the presiding officer. The speakers were C. W. Nelson of Neenah, Wis., and James Whelan of Menasha, Wis., who presented technical subjects, followed by discussion.

Grimes-Munroe Nuptials

William S. Grimes of Appleton, Wis., research chemist for the Menasha Products division of the Marathon Paper Mills Company at Menasha, Wis., and Miss Fern Munroe of Wisconsin Rapids, Wis., were married November 5 at the First Congregational Church at Appleton. Mr. Grimes received his master's degree at the Institute of Paper Chemistry, Appleton, Wis., in June of this year. His bride formerly was secretary to Dr. Thomas N. Barrows, director of the Institute and president of Lawrence College. The couple will reside at 608 W. Sixth St., Appleton, after returning from a honeymoon trip.

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Financial News of Pulp and Paper Industry

Plans Said To Be Under Way For Reorganization of Lake Sulphite Pulp Co.—Control of Keith Paper Co. Will Remain With Present Stockholders —No New Plan For Abitibi Power & Paper Reorganization Proposed.

NEW YORK STOCK EXCHANGE

High, Low and Last for the Week Ending November 16, 1938

	High	Low	Last
A. P. W.	3⅜	3⅜	3⅜
Armstrong Cork Co.	53¼	49⅝	49⅝
Celotex Corp.	16⅜	13¼	13¼
Celotex Corp., pf.	70½	68	68
Certain-Teed Products Corp.	12⅛	10¼	10¼
Certain-Teed Products Corp., pf.	44¾	42½	42½
Champion Paper & Fibre Co.	33¼	30	30
Champion Paper & Fibre Co., pf.	98¾	97½	98¾
Congoleum-Nairn Co.	28½	27	27
Container Corp. of America	17¼	16¼	16¾
Continental-Diamond Fibre Co.	11	10	10
Crown-Zellerbach Co.	15⅛	13½	13½
Crown-Zellerbach Co., pf.	92½	90	91½
Flintkote Co.	30	26⅝	26⅞
Robert Gair	4¾	4⅛	4⅛
Robert Gair, pf.	14⅞	13¼	13¼
International Paper & Power	15⅛	12¾	12⅞
International Paper & Power, pf.	52⅜	46¾	47
Johns-Manville Corp.	109¼	103¼	103¼
Johns-Manville Corp., pf.	127¾	126¾	126¾
Kimberly-Clark Corp.	28	27¼	27½
MacAndrews & Forbes	29⅜	29	29
MacAndrews & Forbes, pf.	120⅛	120	120
Masonite Corp.	58¾	56½	56½
Mead Corp.	14	13¼	13¼
Paraffine Companies, Inc.	61⅛	59	59
Paraffine Companies, Inc., pf.	99¾	99½	99½
Ruberoid Co.	32⅜	30	30
Scott Paper Co.	50¼	50	50
Sutherland Paper Co.	31⅛	30	30½
Union Bag & Paper Corp.	14¼	12¾	12¾
United Paperboard Co.	8¼	7⅜	7⅜
U. S. Gypsum Co.	114	105⅛	107¼
U. S. Gypsum Co., pf.	173	173	173

NEW YORK CURB EXCHANGE

High, Low and Last for the Week Ending November 16, 1938

	High	Low	Last
American Box Board Co.	12	11¼	11¼
Brown Co., pf.	23	21½	21½
Great Northern Paper	39½	39¼	39½
St. Regis Paper Co.	4⅛	3⅝	3⅝
St. Regis Paper Co., pf.	68	65	65
Taggart Corp.	6¼	6	6

New Lake Sulphite Plan

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 14, 1938—It is reported that various plans for the reorganization of the Lake Sulphite Pulp Company, Red Rock, Ont., which for some time has been in liquidation, are under way with a view of completing the plant and getting production started. One or two plans have advanced to such a stage as to warrant the belief that some action may be taken before the close of November. One of the plans is understood to be that of R. O. Sweezey, original president, and the other by John Stadler, president of the company. About $1,250,000 new capital will be needed to complete the project, in addition to $3,500,000 of bonds held by the company which may be issued. The hope is expressed that while the present holders of notes and common stock will have to make some concessions, their lot will not be as bad as at first believed. Assistance in reorganizing and financing may come from industries identified with the products the company may produce. Gair & Co., of New York, and Canadian Industries, Limited, have been mentioned along with certain Chicago groups who are already interested in timber limits in Western Ontario. The question is raised as to whether the mill will produce rayon pulp.

Robert J. Askin, manager of the Thunder Bay Paper Company, Limited, Port Arthur, has been elected President of the Port Arthur-Fort William Kiwanis Club and will take office at the first of the year. Mr. Askin has long been a leading member of the organization. He is also a councillor of the Lakehead Branch of the Engineering Institute of Canada and a member of the Board of Governors of the Port Arthur general hospital.

Keith Stockholders Retain Control

[FROM OUR REGULAR CORRESPONDENT]

TURNERS FALLS, Mass., November 14, 1938.—Control of the Keith Paper Company will remain with the present stockholders as the result of action at a special meeting last week. It was voted to accept the reorganization plan as first submitted in preference to the offer of New York interests to purchase a minimum of 51% of the company's stock.

The re-organization will be effected with the Deerfield Glassine Company and Paul E. Hodgdon, president and treasurer of the latter company, becomes general manager of the Keith Paper Company.

The offer to purchase at least 51 per cent of the stock at $10 per share did not excite sufficient interest to interfere with the plans of those proposing re-organization.

Re-financing will be primarily by the RFC with a loan of $250,000, and others participating will be the Merchants National Bank of Boston, $50,000, First National Bank and Trust company of Greenfield, $50,000, Turners Falls Power and Electric company, $25,000 making a total of $375,000 new working capital.

There will be five trustees, two appointed by the RFC one each by the two banks participating and the fifth will be Douglas Crocker of Fitchburg, a director of the Keith Paper Company. A majority of the voting stock of the company will be deposited under a voting agreement during the operation of the plan.

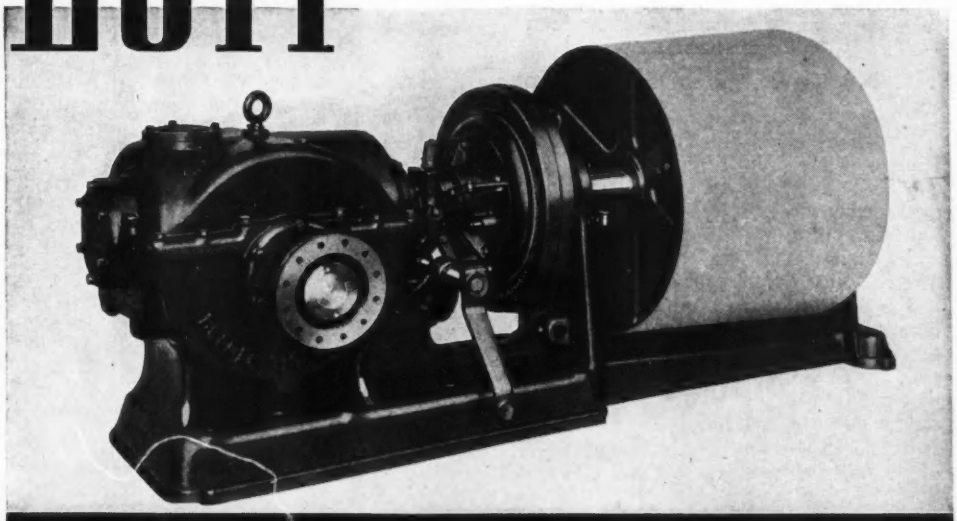
Rolland Paper Improving

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 7, 1938—The Rolland Paper Company of Montreal reports that business, after contraction during the first seven months of this year, has been expanding lately. There have been moderate reductions in selling prices of fine papers, however, and earnings for 1938 are likely to be somewhat lower than those for 1937 when 98 cents a share was reported on the common stock after all charges and preferred dividends.

As at December 31st last, balance sheet of the company showed net working capital of $966,445, with cash and marketable securities of $313,775 in excess of total current liabilities of $298,032. The marketable investments, carried at $298,575 on the balance sheet, include $286,500 par value of Dominion and provincial bonds which had a market value, as

BELOIT



HEAVY DUTY *Hypoid Gear Drive*

● Gears cut of special steel are totally enclosed and operate in bath of oil. Gear and pinion shafts are mounted on roller bearings which are automatically lubricated.

Equipped with improved Beloit automotive type clutch having unusually large air-cooled friction plate area. Oil lubricated throw out collar.

BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS.

THE BELOIT WAY IS THE MODERN WAY

BELOIT IRON WORKS, Beloit, Wisconsin, U. S. A.

at the end of last year, of $327,368. Earned surplus amounted to $310,315. Dividends on the common stock at the current rate about only $60,001.

Rolland Paper operates two mills, one at St. Jerome and one at Mont Rolland, both located in the Laurentian region of Quebec. The company is the oldest fine paper manufacturer in Canada and has built up a steady demand for its output.

No New Abitibi Plan Proposed

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 14, 1938.—Joseph P. Ripley, of New York, representing the bond holders of the Abitibi Power and Paper Co., in a recent conference with Hon. M. F. Hepburn, Premier of Ontario, proposed no new plan for reorganization and no tangible advances were made in this direction. There is no official confirmation of any new plan, and ability of interests identified to form one until improvement in the industry is more definitely questioned. Following stifling by the courts of the Ripley plan under the Ontario Judicature Act, it is believed that only under the Federal Companies Creditors Arrangement can reorganization be effected, and this requires seventy-five per cent approval of all classes of security holders. Cumulative monthly earnings of the Abitibi Company for the first nine months of 1938 amounted to about $1,900,000 and earnings for the full year are expected to exceed by a good margin the $2,100,000 earned in 1936. Present market valuation of the Abitibi enterprise approximates $55,000,000 whereas by January next obligations will have amounted to some $68,000,000.

Lily-Tulip Corp. Reports $344,819

The Lily-Tulip Cup Corporation reports as follows for the twelve months to September 30: Net profit was $344,819 including $37,671 profit on sales of machinery, but before provision for excess profits tax. The profit is equivalent to $1.81 each on 189,539 shares of no par capital stock and compares with $352,150 or $1.86 a share for the 12 months ended September 30, 1937. Not reflected in the above earnings is damage sustained by the corporation on September 21, 1938, due to hurricane. The amount of said damage and the loss recoverable from the insurance carriers by reason thereof are not now determinable. Such damage has not, however, interfered with the normal operation of the business of the corporation.

Dixie-Vortex Reports $729,118

Report of Dixie-Vortex Company for 12 months ended September 30, 1938, shows consolidated net profits of $729,118 after depreciation, federal income taxes, etc., equal after dividend requirements on Class A stock, to $1.39 a share on 202,916 shares of common stock. This compares with $946,450 or $2.46 a share on common for the 12 months ended September 30, 1937.

Central Paper Co. Nets $6,342

The Central Paper Company reports as follows for the September quarter: Net income, $6,342, compared with net income of $63,327 in same quarter a year ago.

Eastman Pulp Gets Pulp Through Albany

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., November 14, 1938.—A large manufacturing concern, the Eastman Kodak Company of Rochester, became an important shipper through the local port terminal this week following the receipt here of a cargo of 2,500 tons of wood pulp from the Pacific Northwest. It was reported that the concern is planning the establishment of a base here for warehousing additional shipments arriving later this year. The pulp is to be used in the manufacture of photographic paper. The shipment was the largest brought here from the west coast since the port was opened.

Although the local port is under embargo for wood pulp going into storage more than 30,000 tons of this product will arrive within the next months under special permits requiring immediate movement from ship to railroad cars. Port officials declared that paper mills in the area have co-operated in keeping the cargoes moving. All warehouses at the terminal here have been filled since last spring with no space left for incoming shipments and plans are now going forward for enlarging facilities. Another large warehouse will probably be constructed in the near future.

Soundview to Pay $1.50

The Soundview Pulp Company is to pay a regular quarterly dividend of $1.50 a share on its preferred stock on November 25, under a vote of the directors at San Francisco. This is to go to preferred stockholders of record November 15. According to the Associated Press, the directors took no action at this meeting toward a dividend on the company's common stock, which was on a $1 annual basis up to June this year, when the quarterly payment was omitted. Last year, however, the company paid an additional $2 par value dividend in preferred stock.

Certain-teed Products Report $195,729

The Certain-teed Products Corporation reports as follows for the September quarter: Net profit, $195,729, compared with net profit of $106,618 in second quarter and net loss of $189,587 in first quarter this year, and with net profit of $133,529 in third quarter of 1937. Nine months to September 30: Net profit, $112,760, against $303,602 earned a year before.

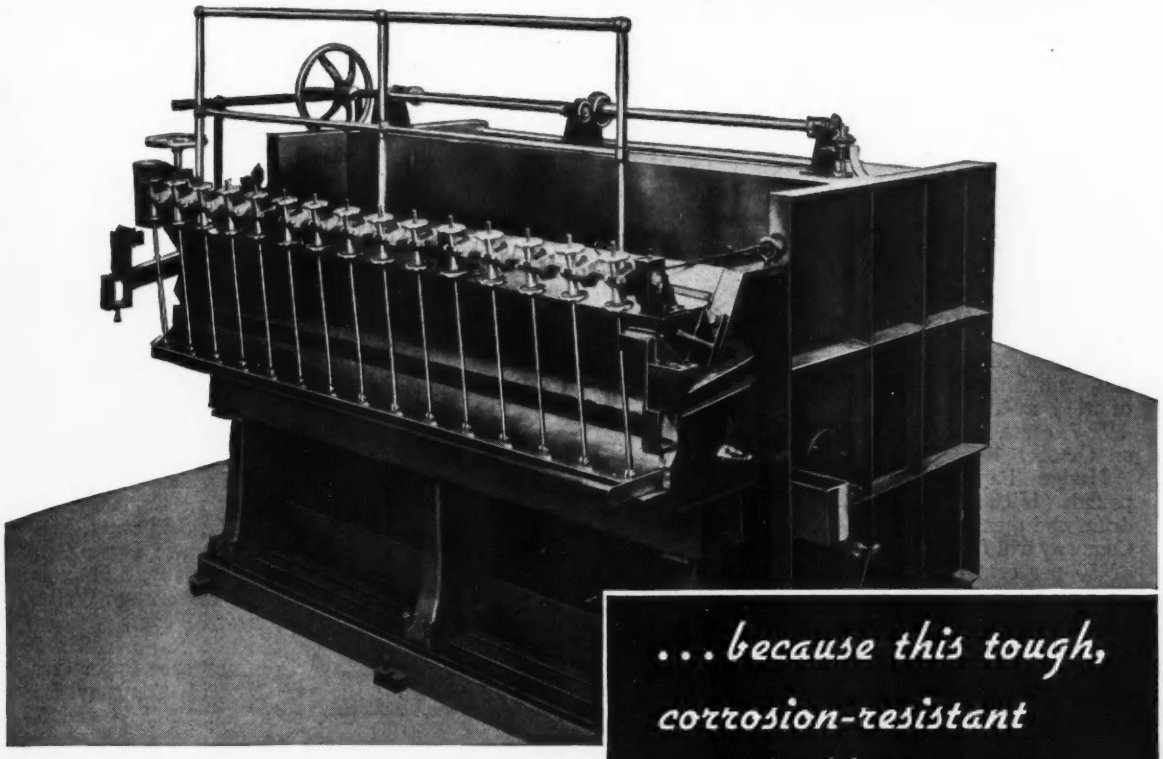
Brown Co. Plan Nears Completion

It is understood that the various interests in the Brown Company have been in conference lately to discuss a plan of reorganization. An understanding has been reached on several important points that have proved stumbling blocks in previous discussions. It is stated that a plan likely to have a good chance of adoption will be completed in a short time.

Great Northern Votes 63 Cents Extra

The Great Northern Paper Company directors voted an extra dividend of 63 cents, in addition to the regular quarterly dividend of 25 cents, both payable December 1 to stock of record November 19. Three months ago an extra of 12 cents was paid. A year ago an extra of 63 cents was disbursed.

Why the *Black-Clawson* FLOW BOX has MONEL Lining and Slice..



This "Black-Clawson" fourdrinier flow box is built from structural steel. The interior and the mid-feather are lined with Monel sheet. The cross brace, apron and slice are also Monel.

...because this tough, corrosion-resistant metal offers many exclusive advantages

When Black-Clawson designed this simplified all-metal flow box, they took no chances on materials. For the lining, mid-feather and slice they selected a metal that has demonstrated its value over many years of service. The result? Four distinct advantages:

1. ***Production efficiency improved:*** The smooth surfaces of Monel do not favor accumulation of fibre and slime.

2. ***Operating costs reduced:*** Cleaning time is cut to a minimum.

3. ***Control made easier:*** The slick surface of the Monel slice permits undisturbed flow of stock and its spring properties assure ready response to control.

4. ***A lining which will last decades:*** The all-welded lining of Monel cannot rust, it resists corrosion and its strength defies abuse.

Monel flow box linings, slices, aprons and other paper machine equipment are noted for long life and dependable operation. Immune to rusting, and defying corrosion by acid or alkaline white water and dilute sulfuric or hydrochloric acid, Monel also affords great strength . . . greater than structural carbon steel. Monel is readily fabricated and welded, its welds are strong and corrosion resistant.

Many fourdrinier machines built in recent years are equipped with Monel parts. Ask your machine builder for further information. Or write us for recommendations and let us send you Bulletin C-3, showing the latest Monel installations in Pulp and Paper mills. Address:

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York, N. Y.

INCO MONEL

"Monel" is a registered trade-mark of The International Nickel Company, Inc., which is applied to a nickel alloy containing approximately two-thirds nickel and one-third copper.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 16, 1938—The Government Printing Office has announced the following paper awards.

The Cauthorne Paper Company will furnish 40,000 pounds of 25 x 38, 1000-80 lbs., M. F. book paper in 21 inch rolls at 5.03 cents per pound, bids for which were received on October 24.

Mudge Paper Company will furnish 10,500 sheets of 12 ply, 22 x 28 orange cardboard at $47.08 per M sheets and the Aetna Paper Company will furnish 46,750 pounds (500,000 sheets) of 32 x 42, 1000-93½ lbs., white sulphite writing paper at 5.57 cents. Bids for these items were received on October 21.

Paper Corporation of U. S. will furnish 14,300 sheets of 25 x 31, 4 ply white cardboard at $31 per M sheets and also 18,500 sheets of 29 x 37 same at $39.75 per M sheets. The Enterprise Paper Company will furnish 159,000 pounds (1,000,000 sheets) of 31½ x 48, 1000-159 lbs. M. F. book paper at 4.9797 cents. Bids for these items were received on October 19.

Mudge Paper Company will furnish 29,100 pounds (150,000 sheets) of 20 x 30, 194-1000 sheets, drumhead manila paper at 14.85 cents; Aetna Paper Company will furnish 16,991 pounds (217,160 sheets) of 50 per cent rag blue bond paper, 7,014 pounds 24 x 38½, 63½, and 9,977 pounds 32 x 4, 93½, at 11.66 cents; the Stanford Paper Company will furnish 29,232 pounds (126,000 sheets) of 35 x 45, 232, at 6.3 cents; the same company will also furnish 1,000 pounds of white stereotype molding paper in 24 inch rolls at 9.95 cents; and the R. P. Andrews Paper Company will furnish 36,000 pounds (86,000 sheets) of 21 x 32, 1000-419 lbs., at 3.75 cents. Bids for all of these items were received on October 14.

Resolute Paper Products Company will furnish 5,000 pounds of No. 1 gummed kraft paper in 24 inch rolls at 7.75 cents, bids for which were received on October 12.

Marquette Paper Company will furnish 37,500 pounds (1,500,000 sheets) of 50 per cent rag, white manifold paper 21 x 32, 1000-25 lbs., No. 14, at 15.98 cents; the same firm will also furnish 77,000 pounds (1,000,000 sheets) of 24 x 38, 1000-77 lbs., M. F. book paper at 5.31 cents; the Whitaker Paper Company will furnish 25,200 pounds (300,000 sheets) of yellow mimeograph paper 24½ x 32, 1000-84 lbs., at 5.6 cents; the R. P. Andrews Paper Company will furnish 40,000 pounds of rope manila paper in 48 inch rolls, at 14.96 cents; the same firm will also furnish 28,000 pounds (100,000 sheets) of 22½ x 28½, 1000-280 lbs., jute tag board at 7.7 cents; and the Whitaker Paper Company will furnish 40,000 pounds of yellow sulphite writing paper No. 32, in 32 inch rolls at 5.25 cents. Bids for all of these items were received on October 7.

Whitaker Paper Company will furnish 5,000 pounds of oiled manila tympan paper in 38 inch rolls at 6.73 cents; and the same firm will also furnish 5,000 pounds (73,000 sheets) of 50 per cent rag, white manifold paper 38 x 48, 1000-68½ lbs., at 16.29 cents. Bids for these items were received on October 5.

R. P. Andrews Paper Company will furnish 10,000 pounds (31,000 sheets) of 24 x 36, 1000-320 pounds, high finish red sulphite paper at 6.5 cents; and the Whitaker Paper Company will furnish 14,925 pounds (150,000 sheets) of 24½ x 38, 1000-99½ lbs., No. 40 blue mimeograph paper at 5.8 cents. Bids for these items were received on September 30.

The Printing Office has received the following bids for 74,800 pounds (800,000 sheets) of 32 x 42 white sulphite writing paper; R. P. Andrews Paper Company, 6.23 cents; Whitaker Paper Company, 5.5 cents; Stanford Paper Company, 5.70 cents; Barton, Duer & Koch Paper Company, 5.74 cents; Marquette Paper Company, 5.43 cents; Aetna Paper Company, 5.53 cents; Mathers-Lamm Paper Company, 6.37 cents; Paper Corp. of U. S., 7.04 cents; Cauthorne Paper Company, 6.388 cents; Butler Company, 5.49 cents; and Graham Paper Company, 6.25 cents.

For 38,500 pounds (250,000 sheets) of 38 x 48 M. F. book paper; John F. Post, Inc., 5.39 cents; Whitaker Paper Company, 5.39 cents; Perkins-Goodwin Company, 5.39 cents; Fitchburg Paper Company, 5.39 cents; Stanford Paper Company, 5.12 cents; Barton, Duer & Koch Paper Company, 5.39 cents; Marquette Paper Company, 5.39 cents; R. P. Andrews Paper Company, 5.39 cents; Paper Corp. of U. S., 5.39 cents; Butler Company, 5.51 cents; Cauthorne Paper Company, 5.39 cents; Walker, Goulard Plehn Company, Inc., 5.31 cents.

For 48,000 pounds (200,000 sheets) of 38 x 50 supercalendered book paper; Cauthorne Paper Company, 5.38 cents; Bradner & Smith Company, 5.62 cents; Paper Corporation of U. S., 5.38 and 5.3 cents; R. P. Andrews Paper Company, 5.38 cents; Barton, Duer & Koch Paper Company, 5.38 cents; Stanford Paper Company, 5.12 cents; Walker, Goulard Plehn Company, 5.23 cents; Whitaker Paper Company, 5.38 cents; and John F. Post, Inc., 5.38 cents.

For 500 sheets of 24 x 38 paraffin kraft wrapping paper; R. P. Andrews Paper Company, $6.75 cents; and Mathers-Lamm Paper Company, $5.00.

For 67,800 pounds (300,000 sheets) of 24½ x 32½ white sulphite index paper; Barton, Duer & Koch Paper Company, 5.17 cents; Virginia Paper Company, 5.7 cents; Whitaker Paper Company, 5.2 cents; Old Dominion Paper Company, 6.44355 cents; Stanford Paper Company, 5.79 cents; R. P. Andrews Paper Company, 5.81 cents; Cauthorne Paper Company, 5.194 cents; Mudge Paper Company, 5.23 cents; Mathers-Lamm Paper Company, 5.2 cents; Walker, Goulard Plehn Company, 5.66 cents; Butler Company, 5.19 cents; and Enterprise Paper Company, 5.875 cents.

For 22,761 pounds (54,000 sheets) of 50 per cent rag, 44 x 64 lithograph finish map paper; Walker, Goulard Plehn Company, 10.42 cents; Mathers-Lamm Paper Company, 11.25 cents; Paper Corp. of U. S., 10.98 cents; Whitaker Paper Company, 12.96 cents; Stanford Paper Company, 11.25 cents; Virginia Paper Company, 11.27 cents; R. P. Andrews Paper Company, 12.77 cents; and Barton, Duer & Koch Paper Company, 10.73 cents.

For 3,338 pounds (15,000 sheets) of 50 per cent rag, 40 x 52 lithograph finish map paper; Walker,

"Potato Harvest" by Jean Francois Millet—Courtesy of Walters Art Gallery, Baltimore, Maryland

"Who Plants Today Harvests Tomorrow"

THE PUSEY AND JONES CORPORATION, WILMINGTON, DELAWARE

Goulard Plehn Company, 10.42 cents; Mathers-Lamm Paper Company, 11.75 cents; Paper Corporation of U. S., 10.98 cents; Whitaker Paper Company, 12.96 cents; Stanford Paper Company, 11.75 cents; Virginia Paper Company, 11.77 cents; R. P. Andrews Paper Company, 12.77 cents; Barton, Duer & Koch Paper Company, 10.73 cents; and Graham Paper Company, 10.85 cents.

For 76,840 pounds (340,000 sheets) of 50 per cent rag, white index paper, 24½ x 32½; Aetna Paper Company, 9.03 cents; Mudge Paper Company, 8.99 cents; Whitaker Paper Company, 14.29 cents; Graham Paper Company, 9.95 cents; Barton, Duer & Koch Paper Company, 8.91 cents; Marquette Paper Company, 9.48 cents; R. P. Andrews Paper Company, 10.85 cents; Stanford Paper Company, 9.02 cents; Virginia Paper Company, 9.25 cents; Mathers-Lamm Paper Company, 10.55 cents; and Walker, Goulard Plehn Company, 8.975 cents.

Center Control Tilting Fork Truck

Yale Model K41 represents the latest development in center control fork trucks as manufactured by the Yale & Towne Manufacturing Company, Philadelphia, Pa.

The center control truck has many operating advantages, most important of which is perfect visibility for the truck operator at all times as he is located closer to the load permitting more accurate movement and greater maneuverability in operation. The operator located in the center of the truck is protected from accidental injury, a very important safety feature.

This Yale K41 truck with a minimum overall height of 83 inches is capable of elevating the forks to a maximum height in raised position of 102¾ inches which means the truck can go through 7-foot doorways and yet is capable of stacking merchandise to ceiling height. The forks are elevated by two independent roller chains 1½ inches pitch by 1 inch wide directly driven by triple reduction of spur gears. The upright channel frame is tilted back 10 degrees and 5 degrees forward by two heavy duty racks which pass over driving pinions driven by triple reduction of spur gears. These tilting racks firmly hold the upright channels in any degree of tilt at the will of the operator.

The main drive on this truck is a double reduction bevel and spur gear, resulting in 20 to 30 per cent greater operating efficiency than is possible with worm driven equipment.

The general design of this truck provides an unusually large battery compartment capable of containing a battery having a maximum rating of 24 K.W.H. yet the truck has an overall length of only 83 inches. Additional information may be obtained from the Yale & Towne Manufacturing Company, Philadelphia, Pa.

Percy D. Wells Incorporates

BOSTON, Mass., November 14, 1938.—Percy D. Wells, Inc., has been incorporated to deal in paper, with a capital stock of 75 shares having no par value. Augusta E. Wells is president; Alfred M. Barnard, treasurer, and Ethelbert V. Grabill, clerk. Percy D. Wells, who died recently, had carried on the business under his own name.

Ask Investigation of Shoe Board

Acting on representations by the Import Committee Customs officials have asked that an official foreign investigation be made of the shipments of various kinds of boards used in the manufacture of shoes, to determine whether or not importers are securing such boards at less than a proper dutiable value. Action on all importations is being suspended pending the outcome of such investigations. The investigations will cover production conditions in Canada, Germany and Sweden of such boards as shoe counter, inner sole, mid-sole and heeling board.

As a result of complaint by the Import Committee that an international cartel controlling the prices of vegetable parchment increased prices soon after the beginning of the year, it is believed that imports are being held for duty at the value given by the Import Committee. While the nature of the action taken is not disclosed by Government officials, it is known that some importers have ceased importations as a result of whatever action was taken by Government agents. The advance in prices was about equivalent to the decrease in duty granted foreign producers by the Belgian Reciprocal Trade Agreement, thus nullifying the intent of the agreement to facilitate American purchases of foreign merchandise.

G. R. Burkhardt to Open Sales Agency

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., November 7, 1938—George R. Burkhardt, president, general manager and a director of the White & Wyckoff Manufacturing Company resigned last week to enter business for himself. The resignation, which becomes effective November 30, was accepted, with regret by the directors.

In association with C. A. Warner, for many years manager of the New York office of the White & Wyckoff company, Mr. Burkhardt plans to organize a sales agency with headquarters in New York City. He plans to continue his home in Holyoke.

He was president of the National Association of Greeting Card manufacturers and was a vice-president of the National Tablet and Stationery Manufacturers association.

His resignation was presented to the company within a few days of the 38th anniversary of his first employment with White & Wyckoff as an office boy.

New Brunswick Uses More Pulpwood

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 9, 1938—During 1937 New Brunswick mills consumed 745,614 cords of pulpwood cut in the Province. Of the pulpwood consumed about 177,990 cords were cut from Crown lands, and the remainder from private lands.

About 370,000 cords of pulpwood were exported from New Brunswick and about 10,000 cords were shipped to other parts of Canada, making a total shipment of pulpwood of 380,000 cords. About 391,000 cords of pulpwood were imported into New Brunswick for manufacture in its mills. The total amount of pulpwood consumed in the New Brunswick pulp mills, together with the amount shipped out of the Province, is placed at 1,125,614 cords, the largest amount in the 22 years for which figures are available.

Ontario Workers Council

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 14, 1938—The Northern Ontario Council of Pulp and Paper Mills Workers recently completed its organization at Port Arthur. Fourteen locals were represented from mills all the way from Sault Ste Marie west in which more than 3,000 union men are employed. Thomas Butler, of Provincial Paper, Limited, is president; Samuel Ashton, of Thunder Bay Paper Mills, Port Arthur, first vice president; H. Chase, of Provincial Paper, second vice president; Howard Grattan, of Thunder Bay Paper Mills, secretary-treasurer. The annual convention will be held in Dryden, Ont. next August.

Resolutions were passed by the convention urging a five day, forty hour week in the pulp and paper industry and two weeks holidays with pay for all permanent employes of the mills. Other resolutions endorsed instituting a scheme of pensions for all workers in the industry; adoption by provincial and federal governments cooperatively of a Dominion wide forest conservation and reforestation program and called upon responsible authorities to put into effect a program of national parks works to meet the unemployment problem, men to be employed through government employment bureau. The convention went on record as strongly urging and working for unity among pulp and paper mills unions and appointed a committee with equal representation of paper makers and pulp mill workers for the various plants in the district, to redraft the working agreements along standard lines so that all mills in the area will operate under similar agreements. A message of congratulation was received from John Duplain. Three Rivers, secretary of the Quebec Provincial Council of Pulp and Paper Mill Workers. A banquet was held at the Prince Arthur hotel at which Alex Gibson presided and the visitors also made a tour of the pulp and paper mills of Port Arthur and Fort William.

Divisional Trade Customs

The program inaugurated by the Salesmen's Association of the Paper Industry to publish and distribute a manual of Divisional Trade Customs is making steady progress. Recently the members of the Eastern Trade Customs Committee checked the copy prepared by the Western Committee and J. L. Ritchie of the American Paper and Pulp Association. At a meeting of the secretaries of the several divisions held in New York, Mr. Ritchie explained the plan in detail. Herewith are a few excerpts from Mr. Ritchie's remarks at this meeting:

"Trade Customs as we know them are not law but reason. They are not applicable to a specific transaction in the trade unless there is a specific provision in the sales agreement that they shall be applicable. They are not mandatory but entirely voluntary. They constitute the studied recommendations of experts, not the precepts of legislators; nor should they be based on agreement either express or implied.

"The lack of correlation in our Trade Customs has led to a demand particularly on the part of the Salesmen's Association for a simplified presentation of the Industry's basic sales data. As first voiced, this demand sought greater uniformity in the actual context of the Trade Customs themselves—and our first studies were made with this objective in view. It did not take us long to discover, however, that Uniform Trade Customs were a virtual impossibility, at least with regard to three of the four major subjects customarily treated in Trade Customs.

"First, Trade Customs relating to *grades and grade specifications* by their very nature can never be uniform.

"Second, it is extremely unlikely that Trade Customs relating to *Standards* can ever be uniform since standards are determined by reference to use requirements and use requirements are virtually uncontrollable.

"Third, Trade Customs relating to *differentials* are normally based on accurate cost data, and since cost factors vary with different grades, uniform differentials in most cases would probably be indefensible.

"This leaves only the fourth major classification—*Terms and Conditions of Sale.* Here uniformity within reasonable limits would seem to be a distinct possibility. Since provisions within this general classification constitute about 40% of the Industry's Trade Customs literature, uniformity in this regard would undoubtedly constitute a very practical forward step. Very few concessions on the part of our respective Associations would be required in order to accomplish this uniformity.

"The Salesmen's Association of the Paper Industry has been giving intensive thought to this matter for well over two years. As pointed out, the first objective of the salesmen was uniformity. Early in their deliberations, however, they began to realize that absolute uniformity was an inachievable goal. Their present objective is simplification. What they want is a manual of the more essential every-day sales data which can be made available to seller and buyer for ready-reference purposes."

The "IZ" Load Carrier Truck

Elwell-Parker's latest bulletin describes the IZ Load Carrier Truck with rated capacity of 6,000 pounds. Truck has two wheel drive and four wheel steer and has four speeds forward and four reverse.

The rigid platform on the IZ truck is 84 inches long, 40 inches wide, and 25 inches high. Drive and trail tires are 20 x 5 inches. The frame consists of heavy section formed plates welded into rugged one-piece frame including dash. The simple rugged design drive axle is equipped with an Elwell-Parker, 500 per cent overload, heavy 'duty and high torque motor. High efficiency spur gear drive. Trail axle is heavy I-beam cast steel, carrying knuckles fitted with upper and lower roller and single ball pivot bearings and with roller bearings in wheel.

Truck is equipped with Elwell-Parker K-75 controller. A mill type magnetic circuit contactor is electrically interlocked with the drive controller. All parts are easily accessible and design is such as to permit truck to travel over uneven floors without transmitting strains to mechanism. In this Load Carrier Truck, as in other Elwell-Parker equipment, the company has emphasized safety to men, machine and loads. As an example—dynamic brakes supplement the travel brake—pedal guard protects operator's feet and deep resilient rubber pedal pads increase operator's comfort.

Duty on Newsprint in Australia

In a report issued by the Department of Trade and Commerce it is stated that the Australian Tariff Board has recommended that an import duty be imposed on newsprint under the British preferential tariff, and that this duty, with a portion of this duty collected under the general tariff, be used to provide a "bounty found" for the assistance of Australian production of such paper. It is further stated that legislation partially adopting the recommendations is likely to shortly be introduced in the Australian Parliament.

The rate of duty under the British preferential tariff and the rate of bounty paid would be on a sliding scale, regulated by the cost of imported newsprint (cost insurance, freight, and exchange). When the cost is £18 per ton of 2,240 pounds or over, no duty would be imposed under the British preferential tariff and no bounty paid on production.

The report recites that newsprinting paper has not yet been produced commercially in Australia. An association of newspapers, being the promoters of a company for the manufacture of newsprint, had applied to the Government for assistance by means of a bounty on production of £4 per ton, the amount of the bounty to be raised by means of a duty on all such paper imported. Newspaper and publishing companies not associated with the promoters of the industry opposed the proposed bounty and duty.

Statistics quoted for the Australian fiscal year ended June 30, 1937, show imports of newsprint paper were: From Canada 150,999 tons, from the United Kingdom, 46,278 tons; from Scandinavian countries, 190 tons; and from other non-British countries, 18 tons—making a total of 197,485 tons.

To Make Sulphate of Alumina in South

American Cyanamid and Chemical Corporation, 30 Rockfeller plaza, New York, N. Y. has purchased from the Seaboard Air Line Railway a seventy-two acre tract of land at Georgetown, S. C., and from the Atlantic Coast Lumber Company the buildings situated thereon.

The property is on the Sampit River and has dock facilities for vessels of thirty foot draft. The plant was formerly the site of the lumber company's extensive operations and has large manufacturing buildings, including boiler house and office buildings.

H. L. Derby, president of the Corporation, has announced that construction and remodelling will begin at once and when completed will enable the corporation to give better service to the trade in the Southeastern states.

The first unit to be installed will be a plant for the production of sulphate of alumina, a product used for water purification and in the manufacture of paper.

The chemical plant under construction at Mobile, Ala., on ground recently acquired, is nearing completion. Other plants of the Corporation in the south include those at Valdosta, Ga., Charlotte, N. C., Chattanooga, Tenn., and plants of partially owned companies at Panama City, Fla., Brownfield and O'Donnel, Tex. The corporation also owns Bauxite mines at Andersonville, Ga., and at Little Rock, Ark.

American Cyanamid and Chemical Corporation also operates numerous plants in Northern cities.

October Newsprint Statistics

Production of newsprint in Canada during October 1938 amounted to 254,872 tons and shipments to 255,100 tons according to the Newsprint Service Bureau. Production in the United States was 72,827 tons and shipments 72,203 tons, making a total United States and Canadian news print production of 327,699 tons and shipments of 327,303 tons. During October, 23,906 tons of news print were made in Newfoundland, so that the total North American production for the month amounted to 351,605 tons. Total production in October 1937 was 422,299 tons.

The Canadian mills produced 881,995 tons less in the first ten months of 1938 than in the first ten months of 1937, which was a decrease of twenty-eight and nine tenths per cent. The output in the United States was 118,826 tons or fifteen and one tenth per cent less than in the first ten months of 1937, and in Newfoundland 85,857 tons or twenty-eight and eight tenths per cent less, making a total decrease of 1,086,678 tons, or twenty-six and three tenths per cent.

Stocks of news print paper at the end of October were reported at 196,283 tons for Canadian mills and 18,590 tons for United States mills, making a combined total of 214,873 tons compared with 214,-477 tons on September 30, 1938.

"Pool Car Schedule and Rates"

The Delaware Valley Paper Shippers Association, Miquon, Montgomery County, Pa., which is this month celebrating the second anniversary of its organization is sending out a unique and interesting folder termed "Pool Car Schedule and Rates".

This folder offers a handy reference on the complete setup of the association. The front cover features a list of the thirty members with the "artist's conception" of their approximate location in the Delaware River Valley.

Inside covers give a listing of the principal grades of paper and paper products manufactured by the various members; a "slide" with the regularly scheduled pool cars, designed to give, at a glance, all the data desired on each individual car; and a general information reference. The schedule represents the results of twenty-four months of progress, made possible by the cooperation of the member shippers and their friends throughout the paper industry.

Cylinder Handling Truck

The Lewis-Shepard Sales Corporation, 245 Walnut street, Watertown, Mass. presents a new truck for handling heavy cylinders of anhydrous ammonia, chlorine, etc.

Handling these heavy cylinders is ordinarily a back-breaking and dangerous job but no longer is such true with this new truck.

By means of a special frame and clamp device the operator may select tank from storage line without disturbing other tanks. With a simple push of a lever the tank is safely clamped to truck frame. Truck frame is then pulled back to carrying position. Rocker on frame makes "breaking-over" easy. The tank is in balance when being transported so that very little effort is necessary to support it. Large wheels and roller bearings allow the truck to go over rough floors with remarkable ease.

Lake States TAPPI Meets

The Lake States Section of the Technical Association of the Pulp and Paper Industry held its regular monthly meeting on Tuesday, November 8 at the Conway Hotel, Appleton, Wis. A combination of election and inclement weather served to keep some members away from the meeting, but about 50 people heard Dr. John C. Wollwage discuss the results of his doctorate thesis work on the flocculation of papermaking fibers. Dr. Wollwage received his degree from the Institute of Paper Chemistry in June of this year and is now a member of the technical staff of the Kimberly-Clark Corporation. The thesis material had been previously presented at the Green Bay convention of the Technical Association but time at that meeting did not permit much discussion so the Lake States Section welcomed an opportunity to have Dr. Wollwage re-present his data.

The study was made at the Institute using low dilutions of fiber suspensions which were circulated through an apparatus utilizing a vertical glass inspection tube for obtaining a visual check of fiber flocculation in a dispersion free of eddy currents. Factors such as hardness of water, alum, colloidal floc, fiber length and temperature were investigated. A method has been set up to measure the adhesion forces between individual fibers, and this study is being continued. The data accumulated may well form the basis for a more complete scientific picture of the manner in which fibers form on the wet end of a papermachine.

The following people recorded their attendance at the dinner and address which followed: Francis Allard, Green Bay, Wis.; C. B. Allen, Kimberly, Wisconsin; Harold Bialkowsky, Neenah, Wis.; Duncan S. Brown, Appleton, Wis.; M. A. Buchanan, Appleton, Wis.; David W. Choate, Milwaukee, Wis.; H. G. Davis, Appleton, Wis.; R. A. Diehm, Philadelphia, Pa.; Phil Dixson, Appleton, Wis.; Martin L. Downs, Kaukauna, Wis.; August Erspamer, Appleton, Wis.; W. P. Feeney, Appleton, Wis.; A. T. Gardner, Combined Locks, Wis.; Winfred B. Giese, Green Bay, Wis.; John H. Graff, Appleton, Wis.; Paul Grady, Kimberly, Wis.; A. Hyttinen, Appleton, Wis.; C. E. Johnson, Appleton, Wis.; W. A. Johnson, Green Bay, Wis.; Teter E. Jones, Combined Locks, Wis.; Melvin J. Killian, Combined Locks, Wis.; Charles M. Koon, Appleton, Wis.; Stephen Kukolich, Neenah, Wis.; Leslie L. Larson, Appleton, Wis.; David Lurie, Joliet, Ill.; N. L. Malcove, Green Bay, Wis.; Adolf Melott, Green Bay, Wis.; L. A. Moss, Stevens Point, Wis.; C. H. Nystrom, Green Bay, Wis.; P. A. Paulson, Appleton, Wis.; K. E. Pinkerton, Appleton, Wis.; Jos. K. Post, Neenah, Wis.; Albert F. Pupenburg, Combined Locks, Wis.; Howard K. Sheldon, Green Bay, Wis.; Linton Simerl, Appleton, Wis.; Joseph Staidl, Kaukauna, Wis.; C. R. Swett, Chicago, Ill.; P. B. Taff, Philadelphia, Pa.; William S. Taylor, Kalamazoo, Mich.; Edwin A. Timmerman, Green Bay, Wis.; Martin Van De Laanschot, Green Bay, Wis.; J. A. Van den Akker, Appleton, Wis.; Erwin J. Vickman, Green Bay, Wis.; Edward H. Voigtman, Neenah, Wis.; Alfred Waulters, Green Bay, Wis., and Herbert Wenberg, De Pere, Wis.

Springhill Starts Making Paper

The South Kraft Corporation mills of the International Paper Company at Springhill, Ala., according to a press report, increased production on November 14 to practically full capacity. This increased output marked the opening of its No. 2 Fourdrinier board machine for the first time since the $12,000,000 plant was put into partial operation last June. The number of employees was increased from 450 to 1000 and the payroll increased from $15,000 to $30,000 weekly. The maximum employment at the plant is about 1,300 and mill officials believe this total may be reached at an early date. That will depend, officials said, on orders from the Southern Kraft Corporation and on general business conditions.

The daily consumption of pulpwood was raised from 450 to 675 cords daily and the increased production is expected to provide considerable additional employment in the forests, but most of this will be under separate companies selling pulpwood to the mill. Full operations at Springhill will ultimately lead to the erection of many new houses at Pine Hills, the town site across the highway from the plant, where numerous homes have been built under FHA plans backed by the company. Original plans called for about 500 homes for employees, of which 100 will be erected at once, in addition to the 100 or more now finished and under construction.

H. C. Dutton Heads White & Wyckoff

HOLYOKE, Mass., November 14, 1938.—At a special meeting of the board of directors of the White and Wyckoff Manufacturing Company, Harry C. Dutton was elected president and general manager, to succeed George R. Burkhardt, who recently resigned. Mr. Dutton takes over his new duties on December 1. He has been associated with White and Wyckoff for four years, and has taken an active part in community affairs.

Mr. Dutton's former office of assistant treasurer will be taken over by Edward P. White, son of Edward N. White, chairman of the board and treasurer of the corporation. Mr. White, better known to all of his friends as "Ted," has been associated with the company for over six years.

William P. Gargan Dead

William P. Gargan, assistant chief engineer of Goulds Pumps, Inc., died at his home in Seneca Falls, N. Y., on November 1, after a brief illness. He was 53 years of age and had been associated with Goulds Pumps for over thirty years. He rose to the position of assistant chief engineer in 1929. He was prominent in the affairs of TAPPI, having prepared and presented several papers to that organization, and had a wide circle of friends in the paper industry having devoted a large portion of his time to the pumping problems of that industry.

Quaker City Paper Co. To Be Lowe Agent

The Lowe Paper Company, Ridgefield, N. J., has appointed the Quaker City Paper Company, 303-311 Vine street, Philadelphia, as sales agent for its products which include Ridgelo Litho Coated Blanks, Railroads and Tough Checks.

Heads Taylor Instrument Companies

Herbert J. Winn, retiring president of the 87-year-old Taylor Instrument Companies, becomes chairman of the board of directors and is succeeded in the presidency by Lewis B. Swift who has served as vice president in charge of engineering and research. Karl H. Hubbard has been appointed chief engineer, in charge of engineering research and design and Dr. H. L. Mason will succeed him as head of the Research Division. Official announcement was made November 9th.

Mr. Swift joined the Taylor Instrument Companies in 1904 after graduation from high school. In 1908 he entered Cornell University, but continued to work for Taylor during vacations. After receiving his M. E. degree in 1912, he rejoined the company on a full time basis. He was in the industrial sales department until 1919 when he organized and took charge of the sales engineering department.

In 1928 Mr. Swift was elected a director of the company, and in 1929 he became chief engineer. Since 1934 he has been vice president in charge of engineering research and design.

Mr. Winn will maintain an active interest in Taylors, as well as in his numerous financial and philanthropic activities.

Other officers chosen by the board of directors include: Vice presidents, P. Richard Jameson, Henry W. Kimmel, and Fred K. Taylor; treasurer, Herbert J. Noble; secretary, Henry W. Kimmel; assistant secretary, George H. Taylor.

Single Suction Multistage Pumps

Single Suction Multistage Pumps are described in a 36-page illustrated catalog issued by the De Laval Steam Turbine Company, Trenton, N. J. In this type of centrifugal pump, which is widely used for feeding high pressure steam boilers and other high pressure service, the individual impellers are unbalanced axially, necessitating the use of a thrust bearing or else some form of hydraulic balancing device. In the De Laval pump, this is a disk subject to discharge pressure upon one side and to an automatically controlled reduced pressure upon the other and having close axial clearance, but no contact, with the casing. Its advantages, as compared with the drum type of balancer, are explained by a numerical example. The De Laval pump is also distinguished by labyrinth wearing rings to reduce leakage from discharge to suction and by a horizontally split casing which renders interior parts readily accessible, also by solid, one-piece diaphragms between stages.

To Represent Miami Coated Paper

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 14, 1938.—C. E. Dodge, 10 High street, has been appointed New England representative of the Miami Valley Coated Paper Company, makers of coated papers and cardboards of all descriptions.

Graham Paper Co. New Brown Agent

The Graham Paper Company of Houston, Tex., has been appointed an agent in that city and vicinity for L. L. Brown's Linen Ledger, the 100 per cent new, white rag permanent record paper made by the L. L. Brown Paper Company, Adams, Mass.

Rigid Lead Transport Line

The first public showing of a product which it is asserted will revolutionize the use of lead pipe as a conveyor of corrosive acids or gaseous vapors was made at the TAPPI fall meeting recently held at Green Bay, Wis. Completely eliminating all creep, sag, deformation or collapse of lead pipe, this new device, on which the patent is pending, and which is sold under the trade name of Crown Sag-Proof Housing, increases the life of lead transport lines from four to eight times their normal life expectancy. Longevity of transport lines protected by this housing is further increased because it employs pure chemical lead in place of corrosive and expensive antimonial alloys.

The new housing is claimed to hold mantenance expense at an all time minimum. Installation, replacement or rearrangement becomes a simple matter of tightening or loosening a few bolts. All lead-burning is completely eliminated as well as expensive steel "v" channel supports.

The construction of the housing prevents the lead pipe within from sagging or creeping due to high temperatures, stress, sway, or the natural tendency of the metal to bring about self-deformation. Since no deformation of the line can occur, maximum line capacity is assured at all times.

Another interesting feature is the method of support or suspension of the line. Rigid steel rods permit the housing to be hung at a lower cost than experienced with steel pipe of comparable sizes.

Crown Metal Company which manufactures the housing offers complete information in their brochure "Transmuting Lead Into Gold." A copy may be secured by writing this company at 117 E. Washington Street, Milwaukee, Wis.

Columbia Issues New Tabloid Catalog

The Columbia Alkali Corporation of Barberton, Ohio, has just issued a bright and interesting new booklet. This booklet which is of convenient pocket size, lists and describes the complete line of Columbia's products including soda ash, caustic soda, liquid chlorine, sodium bicarbonate, calcium chloride and modified sodas. The various packings for each product are listed and an explanation of the various forms in which the more important products are produced is included as a purchasing guide.

A convenient and novel form of indexing by means of graduated page sizes is a unique feature. A new air view of the Barberton plant forms the center spread, where also is contained a brief historical sketch and exposition of the ideals to which the executives feel much of Columbia's success is due.

The company recently adopted a new designed trade-mark which according to W. I. Galliher, director of sales, is meeting with much favor.

Sends Out Last Shipment from Nipigon

The steamship Alex McDougall cleared from Nipigon Bay last week for Green Point, Wis., with fifteen hundred cords of pulpwood aboard consigned to the Combined Locks Paper Company. The cargo was the last of some fifteen shipped this year from the Nipigon district by C. W. Cox & Co., pulpwood contractors.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

New Haven, Conn.—The New Haven Pulp and Board Company, East street, manufacturer of paper board products, has approved plans for extensions and improvements in one of buildings at plant and will proceed with work at once. General contract has been let to the H. Wales Lines Company, Meriden, Conn. Structural steel framing will be furnished by the New England Iron Works, Dixwell avenue, Hamden, Conn. No estimate of cost announced.

New York, N. Y.—The Keller-Dorian Paper Company, Stamford, Conn., manufacturer of foil paper stocks, has concluded arrangements for lease of a floor in building at 516 West 34th street, New York, totaling about 20,000 square feet of floor space, and will occupy for plant. Present factory will be removed to new location at early date and increased production facilities provided. Stamford plant will be discontinued. New York offices of company are at 390 Fourth avenue, New York.

Jacksonville, Fla.—The United States Gypsum Company, 300 West Adams street, Chicago, Ill., manufacturer of wall board, plaster board and similar products, is beginning active work on erection of new mill at Jacksonville, recently referred to in these columns and will push project to completion by next spring. Additional contract awards are being made for different features of work, including erection of structural steel for buildings, fabricated by the Virginia Bridge Company, Roanoke, Va., to W. M. Whitmire Company, Inc., 2225 West Beaver street, Jacksonville, for reinforcing steel to Truscon Steel Company, Hildebrandt Building, Jacksonville, and Youngstown, Ohio; for steel sash to Ceco Steel Products Corporation, 5701 West Twenty-sixth street, Chicago; and for steel rolling doors, to Kinnear Manufacturing Company, Columbus, Ohio. The George A. Fuller Company, 597 Madison avenue, New York, N. Y., has general contract for erection. New plant is reported to cost close to $1,000,000, with machinery, for which different awards are scheduled to be made at early date.

Buffalo, N. Y.—The Moore Corporation, Ltd., 330 University avenue, Toronto, Ont., manufacturer of paper boxes and containers, and other paper products, is arranging for a merger of holding companies operating different affiliated interests, including the F. N. Burt Company, Ltd., address noted, controlling the F. N. Burt Company, Inc., 514 Seneca street, Buffalo, manufacturer of folding paper boxes and containers; the American Salesbook Company, 3000 Highland avenue, and the Gilman Fanfold Corporation, Ltd., Buffalo avenue and Tenth street, manufacturer of commercial paper goods, both Niagara Falls, N. Y. A new company will be formed under the same name of the Moore Corporation, Ltd., with capital of $6,000,000, and 500,000 shares of no-par value common stock, to carry out the consolidation. The F. N. Burt Company, Inc., Buffalo, will maintain its identity as a subsidiary interest.

Detroit, Mich.—The Robert Motschall Envelope Company, 325 East Lafayette avenue, recently organized with capital of $25,000, plans operation of new paper-converting plant, for manufacture of envelopes and kindred paper specialties. New company is headed by Robert R. Motschall, 1125 Bishop street, Grosse Pointe, Detroit.

Cornell, Wis.—The Cornell Wood Products Company, manufacturer of sulphite board specialties, wood pulp board, etc., has begun work on new addition to mill, recently referred to in these columns, and will push erection to early completion. New unit will be one-story, 48 x 75 feet, and will be used for increased facilities in wood pulp division. It is estimated to cost close to $40,000, with equipment. The Hoeppner-Bartlett Company, 631 East Madison street, Eau Claire, Wis., is general contractor.

New York, N. Y.—The Bond Paper Stock Company, organized by Paul Bond to deal in waste paper stocks, etc., has leased the building at 523-27 East Eighteenth street, and will occupy for new local storage and distributing plant, with facilities for sorting, baling and other operations. The structure is five-stories high and considerable part of space will be used for storage purposes.

Chattanooga, Tenn.—The new plant of the Star Box and Printing Company, 1414 Chestnut street, manufacturer of corrugated boxes and containers, will consist of three main one-story units, instead of a single structure, as recently noted in these columns. The manufacturing building will be 250 x 320 feet, with two adjoining structures, 150 x 300 feet, and 60 x 250 feet, to be used for the storage and distribution of raw materials, paper stock, etc., and for the storage of finished products, respectively. Also there will be a boiler house, 50 x 60 feet, and an office building, 30 x 72 feet. As previously noted, erection has been started. The new plant will cost over $350,000, with equipment. The H. K. Ferguson Company, Hanna Building, Cleveland, Ohio, is general contractor.

Victoria, B. C.—The Deep River Development

Company, Ltd., Victoria, has plans under way for new pulp mill on site in vicinity of Elk Falls, B. C., to be used primarily for the production of rayon pulp. It will comprise several one and multi-story units, equipped for large capacity, with power house, pumping station and other mechanical divisions. New mill is estimated to cost over $300,000, with equipment. Plans have been submitted to the Provincial Government for approval and work is scheduled to be placed under way as soon as this authority has been secured.

New Companies

New Britain, Conn.—The Commercial Paper Company has been incorporated with capital of $50,000, to deal in paper products of various kinds. New company is headed by Maurice Gordon, 289 Carlton street, and Itsel Rosenblatt, 165 Linwood street, both New Britain.

New York, N. Y.—The Staple Fiber Corporation has been formed with capital of 1000 shares of preferred stock and 100 shares of common stock, no par value, to deal in staple fiber for rayon production and allied pulp specialties. New company is represented by Topken & Farley, 17 Battery place, New York, attorneys.

Detroit, Mich.—The Wayne Paper Company, 2457 Grand River boulevard, has been incorporated with capital of $50,000, to deal in paper products of various kinds. J. H. Marcero, 5538 Sheridan avenue, Detroit, is principal incorporator and representative.

New Process of Making Gummed Tape

After several months of experimentation, International Gum Tape Manufacturing Company, Inc., 37th street and 2nd avenue, Brooklyn, N. Y., has perfected a new process of manufacturing Gummed Sealing Tape that, it is claimed, results in qualities heretofore unattainable.

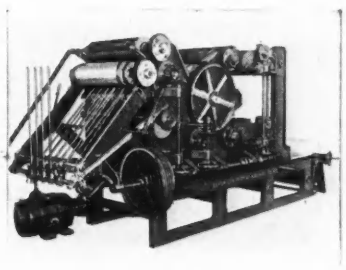
By means of new precision machinery the gumming is applied to the Tape in such a manner that absolute uniformity and consistency are imparted to every inch of the tape. Even repeated twisting and folding of the tape will not cause any cracks in the gumming. One of the problems of shippers has always been to find a satisfactory tape that will adhere well when applied to odd shapes and corners of packages and cartons. This newly perfected tape, it is stated, accomplishes such difficult sealing without any trouble.

The gummed side of a strip of Sealing Tape, has an apparently smooth, glossy surface of unbroken gum coating. Under a microscope the appearance is entirely changed. The glue has minute ridges and depressions. These are very necessary to provide quick acceptance and absorption of the moisture as it is applied to the tape for sealing. A perfectly smooth, unbroken gummed surface would tend to repel and shed the moisture rather than absorb it. This breaking process in International's tape has been perfected by its chemistry department to the point, it is claimed, where quick and permanent sealing is accomplished with a minimum of effort and time.

The tape has been passed by the Certified Products Bureau of the Gummed Industries Association as possessing all the qualifications of a number one sealing tape.

New Rotary Printing Press

A 2-color rotary printing press, designed for printing paper in roll form and delivering it in either sheets or wound back into rolls, is announced by Paper Converting Machine Company, Green Bay, Wis. This press is a letterpress printing type, and will print from lightweight tissue up to the heaviest weight kraft, bond, or book papers. Equipment illustrated here is a sheet type, standard size, with cylinders 27 inch in circumference, 26 inch face, and 24 inch printing surface, although this machine can be built for special size sheets.



One of the distinctive features of this press is that the frame supporting the ink distribution system can be backed away from the tympan and cylinder, leaving sufficient space for the operator to set the plates or repack the tympan. The ink distribution system consists of 2 or 3 vibrators with large ink fountain. The capacity of this press in lineal feet per minute depends upon the kind of paper and the type of design, from 275 feet to 325 feet per minute. While the press illustrated is for 2 colors, provision has been made for the addition of a third color.

The printing cylinders are either covered with wood or metal half shells or spiral groove and rack. The cylinders have eccentric bronze bearings with vernier control. For rotary registry the cylinders are provided with vernier control in the driving gears. The press has threaded bronze bushings for longitudinal registry. A cumulating cylinder is provided so that 10 sheets accumulate at one time and are delivered by fly bars to the receiving table. The press is equipped with Horton Clutch for easy starting.

Pulp Production Normal in Japan

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 16, 1938.—Production of wood pulp in Japan during 1938 has thus far failed to surpass the record breaking level attained during 1937, according to reports received by the Department of Commerce. Primary causes include restriction on imports of timber, which has caused the demand for domestic supplies to increase appreciably, difficulties in transportation of pulpwood from Karafuto to Japan Proper, and restricted imports of casein, rosin, and other materials.

Production of wood pulp by members of the Japan Paper Manufacturers Association reached a total of 195,010 short tons during the second quarter of 1938, bringing the aggregate output for the first 6 months up to 380,526 short tons. The quarterly figures represent a gain of 5 per cent over the preceding 3 months but are 9 per cent below the amount recorded for the second quarter of 1937. The volume of wood pulp production for the 6-months period is 6 per cent under the corresponding 6 months in 1937, but is 4 per cent greater than for the first 6 months in 1936.

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Henry J. Berger
EDITOR

Ronald G. Macdonald
Editor Technical Section

Lynne M. Lamm
Washington Correspondent

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COMING EVENTS IN THE PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

BUSINESS MOVES UPWARD

Now that the substantial and heartening election of many conservatives on November 8 has indicated a shifting of legislative power in Congress to a group not very receptive to the tenets of the New Deal, the outlook for business is much improved. The actual condition of general business activity for the current week is approximated by the activity of some eight major industries, including that of paper. This index now stands at 89.2 per cent, compared with 84.4 per cent for the corresponding week last year. The production activity of paper this week is approximately 10 per cent higher than it was last year, excluding exclusive newsprint mills. Business is better than it was last year at this time and all indices show that business is moving upward.

In commenting on the prospect for business Henry Ford said in a recent interview at Dearborn, Michigan: "The outlook for business in this Country is fine, The improvement already is noticeable. Everything is on the rise. Next year will be all right. It's just a guess but I really think our own business will be 50 per cent better in 1939.

"People are coming to their senses. There is a better feeling among them. Having tired of the many 'isms' that have been brought forth during the last few years, people are returning to work. And work, you know, means prosperity. The rapid obsolesence of manufacturing processes necessitates a continual program of replacement. Our River Rouge $34,000,000 plant expansion program is nearing completion and plans already have been made to expend other large amounts.

"With good crops, low farm prices will not hurt business. Relief for the farmers will come through cooperation of industry and the Grange is finding new uses for farm products in the production of motor cars. People will learn to use farm products for industrial uses."

Business is moving upward and while Government spending is doing a great deal to expand buying, especially in the consumer goods field, permanent prosperity cannot be created by the Government. A high level of employment at good wages and stability of work must necessarily depend upon good cooperation between Government, industry and labor. In his fireside chat broadcast on November 4, President Roosevelt compared modern society with that of a mass-production factory. The President said in part: "The modern interdependent industrial and agricultural society is like a large factory. Each member of the organization has his own job to perform on the assembly line, but if the conveyor belt breaks or gets tangled up, no one in the factory, no matter how hard he tries, can do his own particular job. Each of us, farmer, business man or worker, suffers when anything goes wrong. If our democracy is to survive it must give the average man reasonable assurance that the belts will be kept moving . . . The New Deal has been trying to keep those belts moving . . . It does not wish to run or manage any part of our economic machine which private enterprise can run and keep running. That should be left to individuals, to corporations, to any other form of private management, with profit for those who manage well. But when an abuse interferes with the ability of private enterprise to keep the national conveyor belt moving, Government has a responsibility to eliminate that abuse."

The President's conception of the responsibilities of democratic government are reassuring and possibly the New Deal may emanate a little more friendly cooperation of which industry has, during the past year, received but a meager dole. More friendly cooperation between government and business management and more intensive capitalization of technological progress to achieve a national economy of plenty, was recommended by Alfred P. Sloan, Jr., chairman of the General Motors Corporation, in an address on November 3 before the Boston Chamber of Commerce. Mr. Sloan said in part: "A formula can be found for the satisfactory solution of the great majority of the important business problems that face Americans today. But no such effort can possibly

succeed if approached from the standpoint of an appeal to mass emotion of the uninformed. Neither can it be determined by the sacrifice of business to the political consideration. The Temporary National Economic Committee, authorized by recent act of Congress, offers one form of such cooperation, which should have industry's full and aggressive support."

In expressing his view on what formula to adopt, Mr. Sloan said in part: "It is important that we develop a formula to guide us intelligently in determining what we should do. Such a formula might be expressed as follows: First, progress toward our objective is measured by our ability to reduce the real prices of goods and services; second, we must maintain the broadest possible spread between annual income and the cost of the necessities of life.

"An arbitrary increase in the wage rate, contrary to the common belief, very seldom actually increases purchasing power, because prices invariably rise. The only economically sound way toward our objective, namely, the advancement socially and economically of the American worker, is through increasing the efficiency of industrial enterprise. In other words, we must encourage a more intensive capitalization of technological progress. We must increase the productivity per worker. Then the higher wage rate can be sustained without increasing prices, and should result in reduced prices . . . Here is what we must do: distribute the available work among that number of workers, and no more, who can be assured the desired standard of hours of employment for the maximum possible part of the year. Only by so distributing the workers' share can we insure the maximum employment for the greatest number.

"Prices are based upon costs and profits. In times of subnormal activity, cost must fall. Hence prices, likewise. Expenses must be reduced. Labor should accept a lower hourly rate. Lower commodity prices mean reduced material costs. The maximum flexibility is vital. Otherwise depressions are accentuated in both time and severity. And too many fail to recognize this fact. A most uneconomic trend today is toward rigidity in both the cost and price structure. I believe the true economic formula in the establishment of industry's prices should disregard the movement of the business cycle. I believe the impact of a depression, from the profit standpoint, should be thrown upon the capital employed in industry, having in mind the necessity of an essential profit over the business cycle. Without that the capitalistic system cannot endure.

"There are three factors to the formula: first, the effective capital in the business—capital employed in other words; second, volume in terms of unit output on a yearly basis taken over a period of time—standard volume, let us call it; third, the profit measured by a percentage return on the capital employed. Let me repeat what I have said many times before—the opportunities for accomplishment in this wonderful Country of ours are unlimited—greater today than ever before. Of this I am sure.

"We must base our opinion not on any lack of faith as to the great opportunities as we move into the future, nor upon so many things we see today that disconcert us, but rather upon whether we believe, in the final analysis, there will come about—and before it is too late—an awakening of the consciousness of the American people as to what constitutes the truth in these great questions which so vitally affect their well-being, and a realization that the only real road to more things for more people everywhere—a higher standard of living with the greater stability that all so earnestly desire—is through demanding those policies that truly promote the production of more and more and always more wealth. And that, in that process, there are involved certain essential elements—work, greater efficiency and cooperation."

Production Ratio Report

(These statistics are based upon paper production reports to the American Paper and Pulp Association).

COMPARATIVE MONTHLY SUMMARIES

Months	1938 (c)	1937 (c)	1936	1935	1934
January	63.9%	90.3%	76.1%	65.8%	—
February	68.7%	90.1%	77.9%	70.0%	—
March	69.6%	90.3%	76.0%	70.5%	—
April	68.3%	92.1%	82.3%	70.0%	—
May	69.0%	90.6%	81.6%	69.4%	—
June	66.0%	87.3%	80.7%	72.3%	—
July	72.0%	81.8%	77.3%	64.9%	—
August	77.2%	82.9%	81.5%	70.9%	—
September	76.3%	78.6%	80.5%	71.9%	58.2%
October	81.6%	73.5%	87.6%	75.6%	64.7%
November	—	61.9%	88.0%	75.3%	61.7%
December	—	54.5%	85.9%	71.2%	59.6%
YEAR AVERAGE	—	80.6%	81.3%	70.5%	—
First 44 weeks	71.3%	85.1%	80.4%	70.1%	—

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1938		CORRESPONDING WEEKS, 1937	
*October 1	80.9%	October 2	79.1%
*October 8	81.6%	October 9	77.0%
*October 15	82.6%	October 16	74.8%
*October 22	83.5%	October 23	73.6%
*October 29	81.3%	October 30	68.8%
*November 5	77.4%	November 6	65.3%

The following statistics show the number of mills reporting by ratio groups:

Ratio Limits	October 1 1938	October 8 1938	October 15 1938	October 22 1938	October 29 1938	November 5 1938
0% to 50%	71	56	64	58	48	48
51% to 100%	233	247	239	240	224	157
Total Mills Reporting	304	303	303	298	272	205

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported by individual companies.

Paperboard Operating Ratios

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours", were as follows:

Months	1938 (e)	1937 (e)	1936	1935	Months	1938 (e)	1937 (e)	1936	1935
January	55%	80%	61%	61%	July	57%	67%	69%	59%
February	61%	86%	67%	67%	August	66%	74%	75%	65%
March	60%	87%	68%	67%	September	66%	70%	76%	69%
April	57%	89%	70%	61%	October	—	66%	82%	76%
May	58%	86%	68%	61%	November	—	56%	79%	70%
June	56%	75%	68%	65%	December	—	46%	74%	60%

Week ending Oct. 1, 1938—69%
Week ending Oct. 8, 1938—70%
Week ending Oct. 15, 1938—70%
Week ending Oct. 22, 1938—70%
Week ending Oct. 29, 1938—69%
Week ending Nov. 5, 1938—68%

(e) Basic figures revised to include new members of the National Paperboard Assn.

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TITANOX-C (Titanium Calcium Pigment)

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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Review Of The Paper Industry Literature

Abstracts Compiled By the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Paper Specialties

Study of Impregnating Substances. H. Stäger and J. P. Bohnenblust. Schweiz. Arch. Angew. Wiss. 3:29-37 (1937); Chemie & Industrie 38:1162.—A study of mixtures of gilsonite and vaseline used for the impregnation of paper and textiles for use as electric insulators. In use these mixtures are slowly transformed, becoming more and more viscous and penetrating with increasing difficulty into the material and finally becoming unusable. Tests showed that, at the usual temperatures of utilization, the mixtures polymerize and thus gradually lose their penetrative power; as in the case of other substances, the polymerization depends on a preliminary oxidation. The compounds formed during these transformations render a proper impregnation impossible, but do not affect the dielectric properties of the mixtures. A fairly high, but transitory, increase in the impregnation temperature does not appreciably accelerate the rate of transformation of the mixtures.—A.P.-C.

The Requirements of Paper For Food Packages. C. A. Soutwick, Jr. Paper Trade J. 106, No. 9:31-33 (March 3, 1938).—A brief general discussion.—A.P.-C.

Reasonable Sanitary Standards for Paper Products. J. R. Sanborn. Paper Trade J. 106, No. 11: 46-48 (March 17, 1938).—Bacteriological examination of paper and container board provides a means of determining the sanitary condition of these products and judging the probable sanitary state of mills that produce such paper. Studies of number and types of bacteria in pulp and paper show a close correlation with degrees of microbiological control established during manufacture.—A.P.-C.

Paper. Oxford Paper Co. Brit. pat. 470,748 (Aug. 19, 1937).—To enhance the brightness and to counteract the discoloration apt to occur in groundwood papers, a proportion of at least 10% of alkaline filler, calculated on the weight of the finished sheet, is incorporated in the furnish. In addition to groundwood, the furnish may comprise sulphite, soda, etc., broke, etc. In a suitable mixture, the groundwood constitutes 30% of the fiber furnish and calcium carbonate, etc., 30% of the total. The alkalinity of the filler may be reduced by treatment with alum, etc., and it may be treated with oil emulsion, etc. Titanium oxide, etc., may also be added to enhance the whiteness and opacity of the paper.—A.P.-C.

Manufacture of Carbon Paper. J. Burgmer. Brit. pat. 467,880 (Sept. 2, 1936).—With the use of cheap and porous body papers, the web is supported at the point of the color application by an endless moving band which will take up the color pressed through the web. The color may be recovered by heating and doctoring the band. Alternatively, the color may be taken up by the same web of paper arranged to pass the applying roll twice, itself receiving the color at the second pass.—A.P.C.

Parchment Paper. Paterson Parchment Paper Co. Fr. pat. 812,504 (May 12, 1937).—Paper which prevents evaporation of moisture from food, etc., wrapped therein and which may be printed on is made by parchmentizing relatively lightly the surface thereof so that there remains a fibrous interior section almost unparchmentized, and then impregnating with a waxy material. The parchmentized paper is passed over a roll which applies fluid paraffin and then between heated cylinders under slight compression.—A.P.-C.

Feted Fibrous Cellulosic Sheet Product. A. F. Burgess, assignee of Paper Patents Co. Brit. pat. 468,106 (Aug. 7, 1936).—A number of creped sheets of gossamer thinness formed from a furnish containing 10 to 50% of brittle asphalt of melting-point 60° to 93°C. are impregnated with fireproofing salts and superimposed to form a pad of heat- and sound-insulating material.—A.P.-C.

Reinforced Paper. Heinrich Kleibaumhüter and Peter Kleibaumhüter. Brit. pat. 472,871 (Sept. 27, 1937).—Fibers from two supply sources are formed into the layers or fleeces which are then combined, with the fibers of one layer running in a different direction from those of the other, fluid pulp being applied to the common layer in a paper machine.—A.P.-C.

Paper Gustave Risler. Fr. pat. 813,308 (May 31, 1937).—Paper is subjected at any stage of its manufacture and in an appropriate form to very

high compressions which may reach 400 kilos per sq. m. or more, to reduce or remove the internal cavities of the fibers of the starting material.—A.P.-C.

The Use of Collodion Cotton in the Paper Industry. A. Kraus. Papier-Fabr. 35, No. 39: 373-(Sept. 24, 1937). Discussion of the problems and uses of paper coated with nitrocellulose lacquers. Because of the great absorption of paper for the lacquer; the paper was formerly pre-treated but now the nitro-cellulose lacquer comes mixed with a substance for filling the pores of the paper. Wall papers are treated with nitro-cellulose and they can then be washed, and also playing cards. Printing inks are also compounded with nitro-cellulose as a binding material. Nitro-cellulose is also used with artificial leather.—J.F.O.

Progress On the Subject of the Manufacture of Special Papers. A Foulon. Wochbl Papierfabr. 69, No. 1: 7-9 (Jan. 1, 1938).—The author describes several patents relating to the application of filler, dyestuffs and water-marks and for giving paper surfaces certain desired effects.—J.F.O.

Process and Arrangement for the Manufacture of Paper, Carton, Board and Bags Which Are Impervious to Water and Air. A. Berglein, Hamburg. Ger. pat. 648,738 (Feb. 20, 1934). The invention concerns a method for impregnating the web with water-proof materials and drying same.—J.F.O.

Progress in the Manufacture of Fiber Boards. E. Morath. Zellstoff u. Papier 17, No. 12: 541-46 (Dec., 1937).—By means of schematic drawings and illustrations, the author describes several processes for the manufacture of fiber boards for building purposes. Amongst the processes described are, "Fibroplast" with the "Fahrni" hydraulic press, the "Zefasit" process with the box-like forming section which eliminates directional variations in strength, the "Defibrator" process which uses high pressure for preparing the stock, and the "Biffar" and the "Stramenta" processes.—J.F.O.

The Accursedness of Art Paper. Harold Bayley. Indian Print and Paper 3, no. 2: 50-51 (Dec., 1937); B. I. P. C. 8:301.—Art paper, a highly polished double coated paper, is banned by educational authorities as being injurious to children's eyesight; while few printers really admire it, there is a demand for it for producing certain effects. A body paper from esparto is more satisfactory for art purposes than a base fom sulphite. The coating is either applied to one side of the web at a time or to both sides simultaneously. Common troubles with art paper are picking, pin holes, paper sheeted together from two or more reels having a slightly different surface and producing irregularly good and bad printed results on successive sheets, dust or dirt particles or fragments of coating frayed from the edges by bad cutters which will soil the printing presses, etc. Remedies for the printer are given; however, prevention of such occurrences at the paper mill is always better than cure at the printer.—C.J.W.

Sulphate Pulp Condenser Paper. B. E. Tovbin. Bumazhnava Prom. 15, No. 5:43-53 (1937); C. A. 32:2347.—The mechanical, physical and electrical properties of rag and sulphate condenser paper are compared and the production of special grades of sulphate condenser paper by the method developed at the Malinsk mill is discussed from the technical and economical viewpoint.—C.J.M.

Hard Paper. Schenk. Papier-Ztg. 63, no. 11:186-187; no. 12:204-205 (Feb. 5, 9, 1938); B. I. P. C. 8:302.—A brief description of the manufacture of bakelite-insulated paper for electrical insulating purposes in the form of plates, pipes, and molded pieces is given. The body paper is usually kraft paper, although soda paper, filter paper, or cotton rag paper also finds use for special products. The papers are carefully tested for mechanical strength, density, thickness, heat conductivity, absorptivity, and dielectric strength; it is important that these properties be as uniform as possible in the machine and cross direction of the web.—C.J.W.

Pasted Paper Bags. Papier-Ztg. 63, no. 5:79-80 (Jan. 15, 1938); B.I.P.C. 8:302.—The author emphasizes that pasting paper bags for heavy duty can be carried out in a satisfactory manner.—C.J.W.

Paper and Pulp Testing

General Laws Governing the Oil-Resistance of Paper in Printability. G. L. Larocque. Pulp Paper Mag. Can. 39:106-119, Feb., 1938).—The influence of temperature on oil-absorption is about 9 per cent per °C. Samples must be kept stored at as low a relative humidity as possible, since a 55 per cent increase in relative humidity is capable of permanently decreasing the oil-resistance of the paper by 60 per cent. With castor, tung, linseed, fish, mineral and white oils the absorption time is proportional to the quotient (oil-viscosity)/(surface tension). A method is given for recalculating oil-flotation and air-porosity measurements to a standard caliper of 0.01 cm. in order to obtain the specific internal oil-resistance and the specific air-resistance of the sheet. The sheet structure cannot be assumed to be a homogeneous capillary structure throughout its entire thickness. A surface layer exists which is considerably more oil-resistant than a layer of equal thickness in the interior of the sheet; consequently, the surface oil-resistance cannot be predicted from the specific internal oil-resistance but must be separately evaluated by means of a suitable test. For sheets of the same bulk, that having the more finely comminuted material is the more oil-resistant. Sheets of greater oil-resistance can be obtained by beating and calendering than by wet-pressing to the same sheet-density. The oil-resistance of a mixture of pulps can generally be calculated from that of the components. A method is described by means of which a comparative figure for the "wettability" of a pulp can be determined from the magnitude of the (air-resistance)/(oil-resistance) ratio. The presence of 2 per cent to rosin size is shown to increase the wettability (to oil) by about 25 per cent.—A.P.-C.

Permeability of Membranes to Water Vapor, with Special Reference to Packaging Materials. F. T. Carson. U. S. Bur. Standards, Miscl. Publ. M. 127. 19 p. 1937.—A survey of the literature shows that permeability measurements have been made by four distinct types of methods with, however, widely varying testing conditions and units of expressing the results. The main characteristics of the different methods are tabulated; the reported results are discussed with a view to formulating a standard method for which it is considered essential to provide a seal for preventing edge-leakage, and to control the temperature of the air during the test. The per cent relative humidity and the rate of diffusion of water vapor through air may strongly influence the results. A suggestion for the mechanism of water-transference through a membrane is put forward.—A.P.-C.

Instrumentation Studies. XXVIII

A Study of Photoelectric Instruments for the Measurement of Color: Reflectance and Transmittance*

Part IV: The Eimer and Amend Improved Reflection Meter

By The Staff of The Institute of Paper Chemistry

Abstract

The principle and method of operating the Eimer and Amend Improved Reflection Meter is given. The instrument is classified as ? — G2 — P6. The spectral response is shown to differ greatly from the visibility response of the I.C.I. standard observer to the light of illuminant C. The geometry of the instrument only approximates the I.C.I. standard geometry, because of the large angular range covered by the diffusely reflected rays received by the photocells. Discrepancies attributable to this approximation are estimated. The usual differences in reflectance corresponding to different orientations of the sample are noted. The reflectance scale is shown to be accurate to within 0.2 per cent, when the illumination of the sample is normal. When auxiliary color filters are used, errors up to 0.6 per cent in the reflectance scale are observed. The sensitivity of the instrument is 0.6 microampere per 1 per cent change in reflectance. The mean deviation of a single observation from the average of ten observations on the same sample is 0.2 per cent under normal operating conditions. The transmittances of several filters of the Eastman Wratten series were measured for the purpose of estimating the reproducibility of reflectance measurements made with them. It is noted that the instrument cannot be used for color measurement or color matching. The measurement of opacity and translucency, as defined in the instructions for use of the instrument, is discussed. Data are given showing the comparison of values of contrast ratio (as calculated from reflectance measurements) and Bausch and Lomb contrast ratio.

The Eimer and Amend Improved Reflection Meter is designed for the measurement of total reflectance, opacity, and translucency (as defined in the instrumental instructions).

Since the critical discussion of the methods of reflectance measurement contained in Part I of this series[1] will be continually referred to in order to eliminate needless repetition and, since the nomenclature hereafter used will be but partly intelligible unless the reader is familiar with Part I, a copy of it should be at hand.

Only one instrument (Eimer and Amend Catalogue No. 29739) was studied, but the discussion is applicable to, and most of the data should be characteristic of, all instruments of this model.

Description of the Instrument

A photograph of the instrument is reproduced in Fig. 1. The instrument is seen to consist of two parts. The Reflection Meter (illustrated at the left in Fig. 1) consists of the source of light and a rheostat for the control of its intensity, the photocells, the "daylight" filter, a holder for auxiliary filters, and a sample holder.

The Instrument Panel Box, the device for measuring photocurrent, is illustrated in Fig. 1. It includes a milliammeter, a galvanometer, rheostats, and precision resistance units.

The optical system of the Reflection Meter is shown schematically in Fig. 2.

The instrument is classified according to the scheme given in Part I as ? — G2 — P6. The instrument cannot be classified as regards its spectral characteristics.

The Principle and Method of Operating the Instrument

Reference is made to Fig. 2 in the following discussion of the principles and operation of the instrument.

The photocells (A) receive light diffusely reflected from either the standard or the sample, which are placed at C. These two photocells are electrically connected in parallel. The photocell (B) is illuminated by light scattered from the ground surface of the "daylight" filter (D).

The photocurrents produced by the photocells (A) are measured by balancing the potential differences across the photocells (A), which are shunted by a

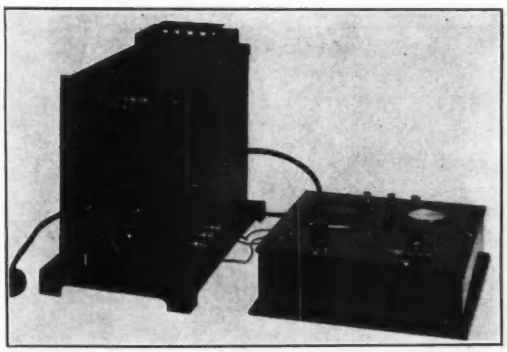


FIG. 1.
Eimer and Amend Reflection Meter and Instrument Panel Box.

* Previous papers in this series are:

[1] Part I. A General Discussion of Color and Color Measurements (Instrumentation Studies. XX). *Paper Trade J.* 105, no. 18: 135-141; no. 19: 27-39 (Oct. 28, Nov. 4, 1937).

Part II. The General Radio Color Comparator, Type 725-A (Instrumentation Studies. XXI). *Paper Trade J.* 105, no. 25: 46-50 (Dec. 16, 1937).

Part III. The Lange Photoelectric Reflection Meter (Instrumentation Studies. XXII). *Paper Trade J.* 105, no. 27: 42-46 (Dec. 30, 1937).

variable external resistance, by means of an auxiliary electrical circuit. The current flowing in the auxiliary balancing, or measuring, circuit is produced by the photocell (B).

The reflectance dial reading is directly proportional to the potential difference of the auxiliary circuit which is necessary to balance the potential difference across the photocells (A).

The method of making reflectance measurements is as follows: After turning on the lamp, a warm-up time of 15 minutes is allowed to elapse before readings are taken. A measure of the intensity of the lamp is noted by reading the milliammeter which is connected to the photocell (B). A standard setting of the milliammeter is chosen and maintained constant by control of the lamp voltage. The standard of reflectance, magnesium carbonate, is placed in the sample holder. The reflectance dial is set to read the reflectance of the standard. The rheostats, for "coarse" and "fine" adjustments, are adjusted until zero deflection of the galvanometer needle is observed when the tap key of the galvanometer is down. The standard is then replaced by the sample. The reflectance dial is varied until zero deflection of the galvanometer is again obtained, then the reading of the reflectance dial is taken as the reflectance of the sample.

The spectral, geometrical, and photometrical features of the instrument will be discussed, in accord with the plan of Part I.

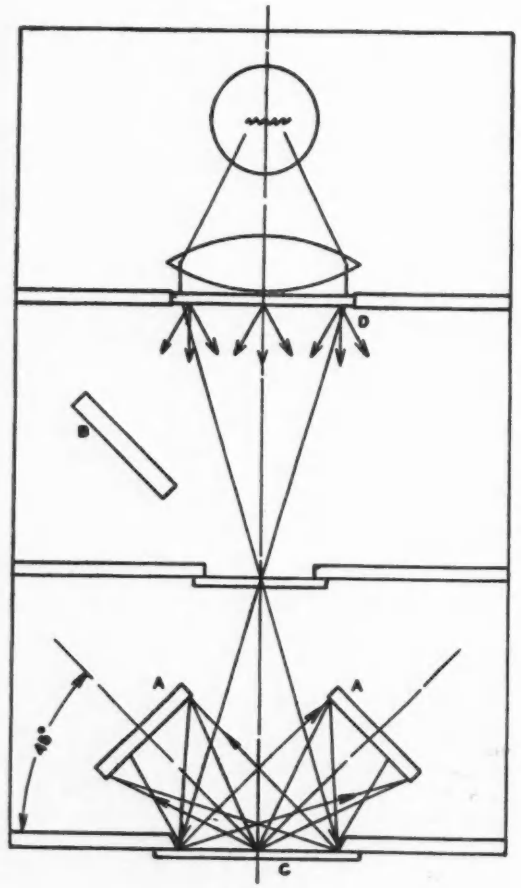


FIG. 2.
Schematic Diagram of the Optical System of the Eimer and Amend Reflection Meter.

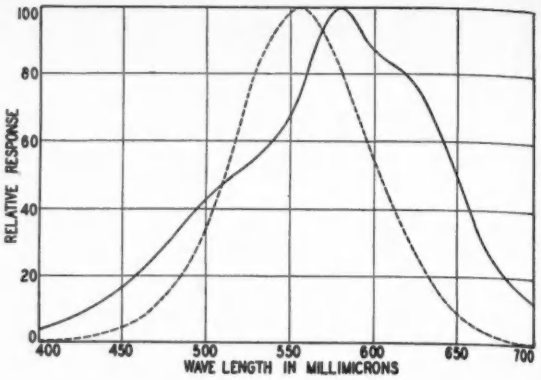


FIG. 3.
Comparison of the Spectral Response of the Eimer and Amend Improved Reflection meter With the Product of the Spectral Energy Distribution for I.C.I. Illuminant C and the Visibility Function.

Spectral Features of the Instrument

The source of light is a 100-watt, 115-volt medium prefocused base projection lamp, having a frosted envelope. The "daylight" filter is a lightly tinted blue ground glass. There is no infrared stopping filter in either the incident or the reflected light beam. Both of the photocells (A of Fig. 1) were found to have the spectral response given by the average curve published for General Electric Hewlett Cells. The variation of the photo-current with the wave length of the light incident on the photocell was calculated from the results of measurements made on the spectral energy distribution of the source, the spectral transmittance of the "daylight" filter, and the spectral response of the photocell. It will be recalled from previous discussions (Part I, Section IV (S4)) that the photocurrent mentioned above is given by

$$i = c\,E'\,T\,S,$$

where all of the quantities are measured for the wave length λ.

As previously discussed (Part I, Section IV (S4)), the reflectance as measured by a non-monochromatic instrument of the present type is defined by the wave length variation of i. In view of the fact that the distributors did not define the total reflectance which is measured, it was thought advisable to compare the $E'\,T\,S$ product of the instrument with the variation of $E\,V$ of the I.C.I. system for illuminant C. The nomenclature used here is that of Part I, Sections VI and VII.

As has been seen[1], these products must vary with wave length in the same way in order that measured total reflectances be equivalent to the visual efficiencies, determined for a standard I.C.I. illuminant. Fig. 3 illustrates the comparison of $E'\,T\,S$ with the $E\,V$ curve for illuminant C. The $E'\,T\,S$ curve deviates greatly from the $E\,V$ curve. In view of the large discrepancies shown in Fig. 3, a reasonable approximation of the measured total reflectances to visual efficiencies for I.C.I. illuminant C is not to be expected. Measurements indicated differences varying from 0.5 to 13 per cent. The instrumental curve would deviate from the ideal curve for I.C.I. illuminant B almost as badly as from the ideal curve shown in Fig. 3 for

Illuminant C. Illuminant C is chosen for comparison because it is becoming the practice to specify color for this illuminant.

The voltage on the projection lamp must be kept constant, as is indicated in the instructions for the use of the instrument, in order to keep the spectral energy distribution, E', constant. The extreme voltage variation corresponding to the limits indicated on the milliammeter would cause a change of reflectance of about 0.5 per cent for samples of appreciable colorimetric purity.

The "daylight" filter has a high transmittance for the near infrared (beyond 700 millimicrons). Hence, there is a high intensity of infrared light in the incident beam. The contribution of this light to the total photocurrent accounts for errors of at least ten per cent of the observed reflectance for certain samples. The spectral reflectance of such samples is less than twenty per cent from 400 to about 550 millimicrons, and increases rapidly from about 550 to 700 millimicrons.

Geometrical Features of the Instrument

The geometry of the instrument is classified as G2, according to the classification given previously.[1] In the following, reference is again made to Fig. 2.

The sample is illuminated by a beam which is incident perpendicularly on its surface, and is viewed by the photocells (A), which are set at angles of 45° with its surface. The angle of incidence (with the normal) of the extreme ray of the incident beam is 19°. The photocells receive reflected rays which make angles varying from 10° to 65° with the normal to the sample surface. The solid angles subtended by the photocells (A) and by the "daylight" filter at the center of the sample opening are, respectively, 0.125 and 0.07 steradians.

Because of the large angular range of the reflected rays, specularly as well as diffusely reflected light is received by the photocells. An estimate of the error due to specular reflection was made by measuring the reflectance of a front surfaced mirror relative to magnesium carbonate. The reflectance of the mirror was 23.5 per cent. By use of this value and the ratio of the specular reflectance of a transparent surface (index of refraction = 1.5) to that of the mirror, it is estimated that the error due to specularly reflected light is about 1 per cent for paper samples of extremely high gloss. The spatial distribution of light reflected from paper is usually greatly different from that of the ideal perfect diffuser—even when the surface is "matte"—hence, this deviation from the ideal G2 geometry will cause an error of the order of 1 per cent or more.

As with all instruments of the G2 geometry, the reflectance of paper will, in general, depend upon the orientation of the machine direction of the sample relative to the plane which includes the central ray to the photocell and the normal to the sample's surface. The changes in reflectance observed when the machine direction of the sample was rotated through 90° varied from 0 to 2 per cent. The order of magnitude of the differences is approximately that observed for the same samples on the Hardy Color Analyzer (Geometry G2).

The large sample area (3 sq. in.) is a good feature of the instrument, since large illuminated areas result in smaller deviations due to local variations in reflectance.

Provision is made in the instrument for focusing and aligning adjustments of the projection lamp. In general, these adjustments need not be made, since medium prefocused base lamps are used. A maximum variation of the focus adjustments produced changes of 0.3 per cent or less for papers of widely varying surface characteristics.

The incident beam illuminates an area of the bakelite case surrounding the sample opening, as well as the area of the sample. The light reflected from the bakelite causes a zero error of approximately 1 per cent.

Photometrical Features of the Instrument

The apparently null method of photometry used is actually the direct method (P6). The theory of the method will be briefly outlined.

The definitions of symbols follow:

r_A = resistance of shunt across photocells (A).

r_o = resistance of balancing circuit when standard is in place.

i_B = current in balancing circuit.

i_o = photocurrent due to light reflected from standard.

i_s = photocurrent due to light reflected from sample.

R_o = reflectance dial reading when standard is in place.

R_s = reflectance dial reading when sample is in place.

k = constant of proportionality in expressions.

$$kR_o = r_o \text{ and } kR_s = r_s.$$

At balance, the potential difference across the photocells (A), which are shunted by an external resistance, is equal to the potential difference across the resistance indicated by the reflectance dial.

When the standard is in place,

$$r_A i_o = r_o i_B = kR_o i_B. \tag{1}$$

When the sample is in place,

$$r_A i_s = r_s i_B = kR_s i_B. \tag{2}$$

The ratio of (2) to (1) is given by

$$i_s/i_o = R_s/R_o. \tag{3}$$

The fundamental accuracy of the reflectance scale of the instrument was checked. The reflectance scale was found to be very self-consistent. It has been shown in the study of other instruments (the results of which will be published later) that this is a necessary, but not sufficient, condition for an accurate scale. To test the scale further, the transmittances of a series of wire screens, as measured by the instrument, were compared with the values determined by an accurate auxiliary photometric means. The screens were in the same positions in the instrument for both the direct and auxiliary measurements. The results of these measurements are given in Table 1. The excellent agreement between the two sets of values indicates that the assumptions made in the theory of the measurements are valid. It may be said that, as far as the photometric features of the instrument are concerned, the reflectance scale is accurate to within 0.2 reflectance units. There is a limitation placed on this statement, namely, the light flux incident on the standard must be approximately that used for the measurements quoted in Table I (illumination normally used).

TABLE I

Transmittance data for neutral wire screens used to check accuracy of reflectance scale
A—Transmittances measured directly on the Eimer and Amend Improved Reflection Meter.
B—Transmittances measured by use of auxiliary photometric means.

Transmittance Screen	A	B
1	64.3	64.7
2	55.4	55.4
3	48.5	48.3
4	39.8	39.6
5	27.1	27.2
6	6.9	7.2
Glass Plates	85.4	85.4

As in all instruments for the measurement of apparent reflectance, the calibration of the reflectance scale depends upon the reflectance of the magnesium carbonate or magnesium oxide which is chosen for the 100 per cent standard. The block of magnesium carbonate which was provided with this particular instrument had a reflectance of 98.5 relative to magnesium oxide. All reflectance measurements were taken with the corrected reflectance of the block. If this had not been done, the observed reflectances would have been too high by 1.5 per cent. It is likely that different instruments of this make would exhibit differences between their readings, which would simply be due to the variation in the reflectances of the magnesium carbonate blocks supplied with the instrument.

It is suggested in the manufacturer's description of the instrument that filters may be used (in the instruments). It is to be noted that errors in reflectance measurements, originating in non-linearity of response, are introduced when auxiliary filters are used in the instrument. In order to estimate the magnitude of the errors due to this cause, the transmittances of neutral wire screens were measured for the two following cases: first, the combination of a Wratten filter 59 plus the Jena BG-18; second, with no auxiliary filter. The data are given in Table II.

TABLE II

Transmittance Data for Neutral Wire Screens With and Without Filters.

Filter Screen	Transmittance: No Filter	Transmittance: 59 + Jena
1	49.6	50.3
2	32.7	33.3

It is seen that the reflectances are in error by about 0.6 per cent at 50 and 33 per cent. These discrepancies are explained by the deviation from linearity of the photocell response. This deviation from linearity is caused by the necessity of using a relatively high shunt resistance for the photocells (A) when the intensity of the incident light is reduced by the filters. (Deviations from linearity increase with increasing shunt resistance.)

The reproducibility of the measurement of reflectance by this instrument depends upon two factors: first, the magnitude of the variation of the voltage applied to the lamp; second, the sensitivity of the balance-indicating galvanometer.

Measurements indicated that changes of 0.01 milliampere in the photocurrent (i_B), which may occur between the time the balances are made for the standard and for the sample, correspond to errors of 0.5 per cent in the reflectance. This fact emphasizes the point noted by the manufacturer, that the photocurrent, i_B, should be held accurately constant during measurements. This type of deviation is attributed to the fact that the response of photocell (B) is not linear. The sensitivity of the balancing galvanometer is 0.6 microampere per 1 per cent change in reflectance. This sensitivity provides the possibility of reproducing reflectance measurements to within 0.1 per cent, if the photocurrent i_B could be held sufficiently constant. Ten successive measurements were made on several samples, under normal operating conditions, and the mean deviation of a single observation from the average was found to be 0.3 per cent.

Remarks on the Possible Use of "Color Filters"

The instructions state that "Color filters may be used with the apparatus so that filtered light may be used for the tests desired."

As long as the "tests desired" have nothing to do with the measurement or specification of color, the above statement has meaning. It will be recalled that, where color measurement is concerned, the most important problem is the *choice* of filters which have the spectral transmittances previously given in Part I, Section VII.

Several filters of the Wratten series of Eastman Kodak Company were used in the instrument for the purpose of estimating the reproducibility of reflectance measurements made with the filters in the beam. The transmittances of the filters as measured on the instrument are given in Table III.

TABLE III

Transmittance with Various Filters

Filter	Transmittance (per cent)	Filter	Transmittance (per cent)
49	3.5	25	32.7
72	2.0	47	8.8
74	1.7	59	32.0
75	3.0		
76	1.0		
73	2.0		
71A	4.5		

For filters of less than 20 per cent total transmittance, the reproducibility is given by $(20/T) \times 0.1$ per cent. This estimate assumes that i_B (balancing photocurrent) is held constant. If the variations of i_B were such as are usually observed in practice, the reproducibility limits would be more nearly given by $(20/T) \times 0.3$ per cent. For the "monochromatic" series of filters (49-71A), the limits of reproducibility are too large for accurate reflectance measurements.

Opacity and Translucency

The instructions for use of the instrument define a measure of opacity as follows:

$$\text{"Opacity" (per cent)} = \frac{R_{.98} - R_o}{R_{.98}} \times 100,$$

where
$R_{.98}$ = Reflectance of a sheet backed by magnesium carbonate.
R_o = Reflectance of a sheet backed by black felt.

This definition may be written

$$\text{"Opacity" (per cent)} = 100 - C_{.98}$$

where

$$C_{.98} = \frac{R_o}{R_{.98}} \times 100.$$

"Translucency" is defined as (100-Opacity) and is then given: "Translucency" $= C_{.98}$.

The definition of "opacity" is contradictory to the TAPPI definition of opacity and to those generally used, and "Translucency" as defined by the manufacturer is more closely akin to TAPPI opacity. The contrast ratio, $C_{.89}$, was calculated from measurements of R_o and R_∞, using the chart published by Judd[2], in order to arrive at a reasonable basis for comparison with values of TAPPI opacity. In Table IV the calculated values of $C_{.89}$ are compared with the $C_{.89}$ values as measured directly on the Bausch and Lomb Opacimeter. The measurements were made on "white" papers and *conclusions drawn from*

TABLE IV

Data showing the comparison of contrast ratio, C_{∞}, (calculated from Eimer and Amend Reflection Meter data) with Bausch and Lomb contrast ratio, C_{∞}.

Sample	Eimer & Amend C_{∞} (calculated)	Bausch & Lomb C_{∞}
1	83.7	84.1
2	96.0	96.2
3	80.1	81.5
4	83.0	83.7
5	85.4	84.7
6	85.0	84.5
7	86.7	87.3
8	82.7	83.4
9	97.0	97.3
10	96.2	96.2
11	96.5	95.6
12	96.0	96.5
13	97.0	96.8
14	91.0	91.0
15	97.5	97.0

[2] Judd, D. B., *Paper Trade J.* 101, no. 5: 40-41 (August 1, 1935).

the comparison of the results must be restricted to this range of papers. For those papers whose spectral reflectance curves are not as constant as are those of this group, larger discrepancies may be expected to occur. The main instrumental factors which account for the observed differences, as well as those to be expected, are spectral response and geometry of illuminating and viewing of the samples.

Conclusions

The instrument is designed to measure total reflectance. By comparison of the spectral response of the instrument with visibility response of the I.C.I. standard observer to the light of illuminant C, it is shown that the total reflectance cannot be taken as a measure of visual efficiency. This means that the instrumental values of total reflectance will not correlate with visual judgments of the brightnesses of samples. The distributors suggest that color filters may be used; however, the design of the instrument is not suitable for color specification or color matching. The suggested measures of opacity and translucency are in contradiction with usually accepted measures of opacity. However, approximate values of TAPPI opacity may be calculated from instrumental values of total reflectance.

Kalamazoo TAPPI Discusses Bleaching

Kalamazoo TAPPI Discusses Bleaching

The Kalamazoo Valley Section of TAPPI enjoyed listening to two very fine speakers at their meeting Thursday evening, November 3.

M. W. Phelps Gives Talk

M. W. Phelps, of the Solvay Process Company, Syracuse, N. Y., gave a talk on "The Bleaching of Wood Pulp." His discussion covered the theories and present practices of multiple stage bleaching on both sulphite and kraft pulps. He said that sulphite is usually bleached in two or three stages consisting of chlorination, caustic extraction, and hypochlorite bleach. This corresponds to the three types of colored compounds present in the unbleached pulp—those soluble in water after chlorination, those soluble in caustic, and those soluble in neither until after an oxidizing treatment. With kraft pulp more than three, sometimes as many as seven, stages of bleaching are employed in order to obtain a bright, irreversible color.

John Traquair

John Traquair, director of research, of the Mead Corporation, Chillicothe, Ohio, talked on "The Reclamation of Old Papers, Carbonate Filled". Dr. Traquair dismissed the subject of carbonate filled papers quickly by stating that the de-inking must be done with caustic in place of some of the soda ash. He then went into a very comprehensive discussion of the subject of de-inking old papers. He stressed the fact that plenty of washing is necessary for obtaining a good color stock. He said one of the serious problems is the disposal of the large amount of sludge resulting from the de-inking.

The dinner and meeting were held at the Park American Hotel in Kalamazoo. 72 attended.

The next meeting will be at the same place, Thursday, December 1. At that time Dr. J. H. Long, of the Hercules Powder Company, Wilmington, Del., will talk on "Synthetic Resins and Protective Coatings."

Those in attendance were: R. L. Mashburn, A. G. Dreis, M. J. Loveland, Harris O. Ware, H. Martin, F. L. Chappell, J. W. Burke, R. R. Buss, H. F. Kleinman, W. S. Taylor, Frank Libby, R. B. Stewart, Hugh Smith, L. H. LaLiberte, Al Perlick, John Bauman, C. W. Reade, A. E. Hays, H. E. Stafford, M. R. Wilkins, J. L. Russell, R. A. Olson, Wayne Case, Hod Heath, Joe Waber, A. W. Cole, Harry C. Bradford, O. F. Fischer, A. B. Milham, Fred Hodgemire, C. C. Schneider, F. B. Eilers, W. A. Kirkpatrick, Larry Lynd, J. N. Wise, J. Boodt, A. L. Sherwood, S. R. Turner, V. G. Heinmuller, G. O. Ingling and C. B. Smith, all of Kalamazoo, Mich.; W. R. Tobin and W. Burnhart, of Detroit, Mich.; J. R. Stephenson and L. C. Daly, of Elkhart, Ind.; E. W. Cole, Watertown, N. Y.; H. C. Pearson, N. W. Fulton, M. Lawrence and F. L. Brown, of Chicago, Ill.; R. Tutt, Jr., Gowanda, N. Y.; D. W. McCready, Ann Arbor, Mich.; Art Stolle, H. S. Faram, L. J. Scheid, E. G. Milham, of Watervliet, Mich.; V. L. Shaw; R. L. Barton, Plainwell, Mich.; C. H. Champion, New York City; O. T. Birkeness and W. E. Smith, Newark, N. J.; H. M. Fabe, Cleveland, Ohio; F. H. Harris, Syracuse, N. Y., Paul deGuehery, Plainwell, Mich.; M. W. Phelps, Syracuse, N. Y.; W. F. Wolfe and J. R. Cummings, Ostego, Mich.; P. Vogelsant, M. J. Roberts and R. D. Freeman, Midland, Mich.; P. R. Welch, Chicago.

New Glazed Board Plant

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 14, 1938—A new plant for the manufacture of coated paper and glazed board will shortly commence operations in Toronto at 45 McMurrich St. where suitable premises have been secured. The name of the concern is Canada Glazed Papers, Limited. Ernest Rolph, who is a widely known paper salesman in Toronto and for some time has been associated with the Alliance Paper Mills, is head of the new organization which expects to get under way early next month and will turn out a wide range of coated stock.

Reactions of Lignin With Hydrogen*

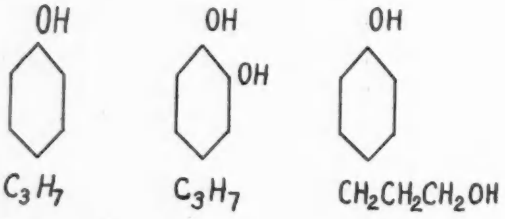
By Elwin E. Harris[1] and Homer Adkins[2]

Abstract

Lignin isolated by methanol and hydrochloric acid, alkali lignin, and sulphuric-acid lignin have been subjected to temperatures of 250 to 260 deg. C. in the presence of hydrogen at 170 to 400 atmospheres. Four products have been separated and identified; methanol; n-propylcyclohexanol-1; 4-n-propylcyclohexane-diol-1, 2; and 3-(4-hydroxycyclohexyl) propanol-1. The properties of the high-boiling residue show that there are units in lignin containing 14 or more carbon atoms.

Soluble lignin was converted into a mixture of collorless products when it was heated with hydrogen under pressure in the presence of copper chromium oxide. One mole of hydrogen was taken up for each 25 to 35 grams of lignin used, depending on the type of lignin and the method of isolation. The reaction took place in dioxane solution at 250 to 260 deg. C. under 150 to 250 atmospheres of hydrogen during a period of 18 to 24 hours.

Lignin was converted by this reaction into methanol, a fraction boiling at 70 to 129 degrees C. at 1 mm., and a residue boiling above 130 degrees at 1 mm. The fraction boiling at 70 to 129 degrees was fractionated into three derivatives of propylcyclohexane, namely, an alcohol boiling at 69 to 70 degrees at 1 mm., which has been identified as 4-n-propylcyclohexanol-1 (formula I); a glycol boiling at 107 to 110 degrees at 1 mm., which has been identified as 4-n-propylcyclohexanediol-1, 2 (formula II); and a glycol boiling at 125 to 129 degrees at 1 mm., which has been identified as 3(4-hydroxycyclohexyl)-propanol-1 (formula III).



FORMULA I FORMULA II FORMULA III

The amounts of these fractions were found to vary, depending on the source of the lignin and the manner of isolation. These are shown in Table I.

The identification of the products of hydrogenation of lignin have been described in a former publication by Harris, D'Ianni, and Adkins *(6)*.

The material boiling above 130 deg. C. at 1 mm. was a mixture of colorless compounds having the general formula $(C_6H_{11}O)_n$. The residue from the hydrogenation of hardwood lignins contained no methoxyl; that from white spruce contained 10.0 per cent methoxyl. The residues boiled over a wide range but practically all the material distilled below 300 degrees at 1 mm. The boiling range and the composition corresponded to compounds having the formula, $C_{18}H_{32}O_3$ or $C_{24}H_{42}O_4$ for the hardwood lignin, while that from spruce containing methoxyl corresponded to the formula $C_{19}H_{38}O_3$.

TABLE I.—YIELD OF HYDROGENATED PRODUCTS FROM VARIOUS LIGNINS

Source of lignin and method of isolation	Part of total lignin in wood, Per cent	Methoxyl content of isolated lignin, Per cent	Products isolated from hydrogenated lignin: Methanol, Per cent	I, Per cent	II, Per cent	III, Per cent	Residue, Per cent
Aspen lignin by methanol and hydrochloric acid.	60	27.0	26.5	11.0	3.2	24.0	22.0
Aspen lignin by sulphuric acid method (alcohol soluble)	30	20.6	19.0	6.0	2.0	15.0	48.0
Aspen lignin soda pulping liquor (precipitated by acid)	60	11.6	10.5	4.0	1.4	9.0	66.0
White spruce lignin by methanol and hydrochloric acid.....	25	23.0	15.0	7.0	2.0	12.0	52.0
Black gum lignin (soda pulping liquor precipitated)	60	11.8	11.0	5.0	1.0	14.0	60.0

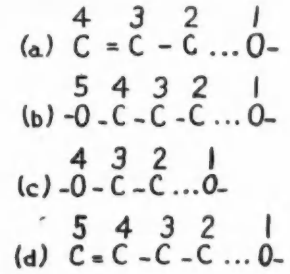
The products boiling above 130 deg. C. at 1 mm., were dehydrated by heating at 430 degrees over alumina deposited on Italian pumace and then hydrogenated over Raney nickel. A mixture of a hydrocarbon and an alcohol were obtained that boiled at 80 to 140 degrees at 1 mm. The alcohol was removed by treatment with metallic sodium, which made the alcohol insoluble in ether. The hydrocarbon was extracted with ether and distilled. The hydrocarbon boiled at 92 to 95 degrees at 1 mm. and had the general formula C_nH_{2n-2}. The boiling range suggested that the hydrocarbon had 18 or more carbon atoms.

A preliminary investigation of the properties of the products of hydrogenation revealed that compound I (n-propylcyclohexanol-1) was a good solvent for lignin, resins, and oils. It was insoluble in water. It had possibilities, because of its stability, as a solvent for the hydrogenation of lignin. Tests made at the Forest Products Laboratory showed that it was a very good plasticizer for lignin plastics and also that it was a preservative of about the same value as creosote against wood-destroying organisms. Compounds II and III were very viscous and had the property of delaying the evaporation of low-boiling organic solvents. The high-boiling residue was insoluble in water and melted high enough to be satisfactory for use in bonding plywood.

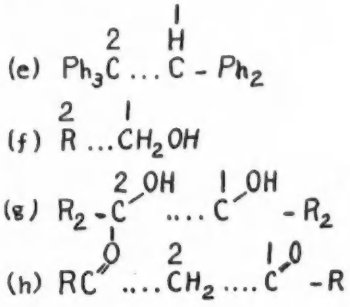
The conditions under which hydrogen was taken up and the products formed are of significance in a study of the structure of lignin. The behavior of a great number of organic compounds toward hydrogen in the presence of copper-chromium oxide on Raney nickel at elevated temperatures has been studied by Adkins and his coworkers. The results have been published in a monograph *(1)* and in the Journal of the American Chemical Society. These may be summarized as follows: a cleavage between oxygen (1) and carbon (2) occurs in the presence of

* Presented at the fall meeting of Technical Association of the Pulp and Paper Industry, Green Bay, Wis., September 8-10, 1938.
[1] Chemist, Forest Products Laboratory, Madison, Wis.
[2] Professor of Chemistry, University of Wisconsin, Madison, Wis.

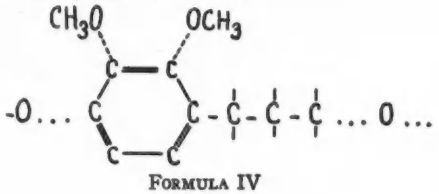
hydrogen over copper-chromium oxide at 250 deg. C. in the following groupings and in the order given:



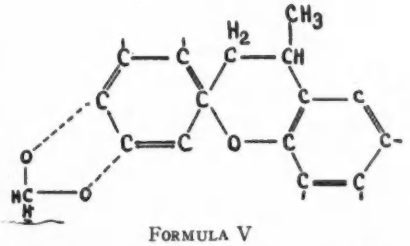
and between carbon (1) and carbon (2) in the following groupings:



If lignin consisted of units of p-propyl phenol groups as shown in formula IV or V

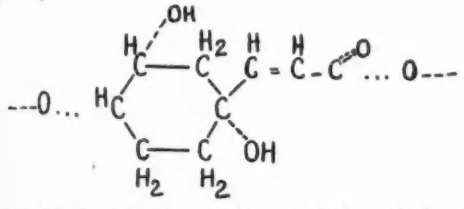


FORMULA IV



FORMULA V

as proposed by Freudenberg or of units of metasaccharonic acid VI which Hall *(5)* has proposed as an intermediate compound that may arise from sugars and may be the source of the aromatic substances in plants,



it would give the nine carbon alcohols and glycols reported above from either formula IV or VI, but would require cleavage of a carbon-to-carbon linkage in formula V. The boiling range of the high-boiling product obtained from the hydrogenation of lignin would indicate that lignin also contained units of 18 or more carbon atoms. The presence of such units have been suggested by Freudenberg (formula V) and by Hibbert *(7)*, but thus far the only known unit containing more than nine carbon isolated from lignin is dehydrodiveratric acid and that would not be formed except by rearrangement of the groupings in the proposed formulas.

Hydrogen was taken up very slowly by lignin; very little being taken up until after heating for about 4 hours at 250 deg. C. This temperature is above that at which lignin begins to decompose, so that the products obtained are not indicative of the prexistence of such units in the lignin molecule but merely of the presence of certain groups that may form them on cleavage. For example, the aromatic compound, 4-n-propyl phenol, was hydrogenated to n-propylcyclohexanol-1 very readily with Raney nickel and hydrogen at 200 deg. C., whereas lignin took up very little hydrogen under these conditions. The work of other investigators involving the cleavage of lignin by heat, which gave aromatic compounds with propyl side chains and hydroxyl groups, was by destructive distillation *(8)* and by alkali fusion *(3)*. These products led Freudenberg *(4)* to postulate aromatic formulas for lignin. The low yields of these products and the fact that destructive distillation and alkali fusion of lignin were exothermic reactions suggests that the aromatic products were the result of cleavage of the lignin molecule and the recombination of the residues into aromatic substances.

The lignins subjected to hydrogenation correspond to the formulas:

Methanol aspen lignin.....	$[C_{22}H_{32}O_8(OCH_3)_3(OH)_2]_x$
Aspen lignin by sulphuric acid.....	$[C_{22}H_{30}O_8(OCH_3)_3(OH)_4]_x$
Aspen and black gum lignin by soda pulping	$[C_{22}H_{34}O_8(OCH_3)_3(OH)_2]$
Methanol white spruce lignin.....	$[C_{21}H_{32}O_8(OCH_3)_3(OH)_4]_x$

One oxygen in each of the foregoing lignins appears to be a carbonyl group. This leaves several oxygens that are not accounted for in hydroxyl groups, methoxyl groups, and in joining the nine carbon units together. The presence of units of more than nine carbons indicates that some of the oxygens exist as cyclic ethers.

Experimental Part

Preparation of Lignin

Methanol lignin.—Coarse sawdust, 20 to 40 mesh, was extracted first with cold ethyl alcohol and then with an ethanol-benzene mixture (1:2) in a Lloyd extractor. The extracted wood (450 g.) was refluxed for three days with 4.5 liters of methanol (99 per cent) containing 3 per cent hydrogen chloride. The solution was removed, concentrated to about 2 liters, and poured into 10 liters of cold water. The precipitated lignin was filtered from the solution, air dried, again dissolved in 750 cc. of methanol, and precipitated by pouring into 10 liters of water, air dried and then dissolved in 300 cc. of glacial acetic acid. Insoluble fractions were discarded. The acetic acid solution was poured into 20 liters of water and, after filtering, was washed free of acetic acid. It was air dried and then dried at 35 deg. (5 mm.) overnight. The yield from aspen was about 60 per cent and from white spruce 25 per cent of theory. The yield could be increased by further treatments to 90 and 40 per cent, respectively.

Soda liquor lignin.—Soda liquor obtained from

the pulping of wood (12 pounds) with 2.4 pounds of caustic soda dissolved to make a 4 per cent solution was acidified with 10 per cent sulphuric acid and the precipitated lignin removed by filtration. The product was air dried and dissolved in 6 liters of alcohol after which it was again precipitated by pouring into water containing a small amount of acetic acid. Under these conditions the lignin was a granular material which filtered easily. After air drying the lignin was dissolved in 1 liter of glacial acetic acid, filtered, and then poured into 20 liters of water. The lignin, which was a light tan color, was filtered from the solution and washed until colorless. The yield of dried material was 60 per cent of the theoretical yield.

The soluble fraction of the sulphuric acid lignin was obtained by extracting the lignin prepared by methods *(9)* described formerly.

Reaction of hydrogen with lignin.—Seventy-five grams of dried lignin were dissolved in 700 cc. of dry dioxane and placed in a 1300 cc. bomb with 25 grams of copper-chromium oxide *(2)*. Hydrogen was introduced at a pressure of 170 atmospheres. The bomb was heated to 250 deg. for 24 hours while shaking. During this time the pressure dropped 50 to 100 atmospheres, depending on the lignin used.

Isolation of products.—The catalyst was removed. The methanol-dioxane-water fraction was distilled through a Widmer column and then dried over anhydrous potassium carbonate to remove the water. The methanol and dioxane were fractionated in a 30-cm. Widmer column.

A fraction boiling at 65 to 150 deg. C. at 1 mm. was removed from the material remaining without the use of a distilling column. That remaining is designated as residue in Table I. The fraction boiling at 65 to 150 degrees was carefully distilled and redistilled in a modified Widmer column *(10)* into the three fractions shown in Table I.

Literature Cited

(1) Adkins, H., Reactions of Hydrogen with Organic Compounds over Copper-Chromium Oxide and Nickel Catalysts. Univ. of Wis. Press. Madison, Wis., 1937.

(2) Connor, R., Folkers, K., and Adkins, H. *J. Am. Chem. Soc.* 54:1138 (1932).

(3) Freudenberg, K., *Ber.* 70:50 (1937).

(4) Freudenberg, K., *Papierfabr.* 36:34 (1938).

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(6) Harris, E. E., D'Ianni, J., and Adkins, H., *J. Am. Chem. Soc.* 60:1467 (1938).

(7) Leger, F. and Hibbert, H., *J. Am. Chem. Soc.* 60:565 (1938).

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(9) Sherrard, E. C. and Harris, E. E., *Ind. Eng. Chem.* 24:103 (1932).

(10) Smith, M. E. and Adkins, H. *J. Am. Chem. Soc.* 60:657 (1938).

Great Lakes Proration Agreement

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 14, 1938—Great Lakes Paper Company, Limited, Fort William, Ont. have been served notice by the Ontario government requiring the company to abide by its proration agreement in effect in the newsprint industry. In reply to the notice the company states that it is not in a position to comply with the agreement without violating its contracts for the sale of newsprint. Negotiations are under way for the solution of the problem. It is reported that should the company agree to accept proration production, C. H. Carlisle will refuse to remain as president. No announcement will be made by the company until negotiations going on with the government of Ontario and the Newsprint Association of Canada are completed. Great Lakes Paper Company is not a member of the Association and has not felt itself bound by the proration agreement in effect by members of the Association.

It is learned that efforts have been made to bring the Great Lakes Paper Company under the proration plan and that the Ontario government favors such a step. In the meantime, the company has been operating at a higher ratio to capacity than most of the newsprint mills in Canada. When the company was incorporated it was guaranteed that a group of some twenty-five publishers would contract for a minimum of 67,500 tons of newsprint per year for a period of ten years from January 1st, 1936, with an option to prolong these contracts for a further five years to December 31, 1950. The rated capacity of the company is approximately 100,000 tons of newsprint annually but it produced more in 1937. Great Lakes Paper Company has been operating this year at some 32 per cent under last year whereas the industry as a whole has been operating 28 per cent below last year. Under the proration scheme no one mill is to operate at a higher rate than the average of the industry and is expected to hand over to other mills running under the average its excess business. The rule applies only to Ontario and Quebec output so far, as British Columbia, the Maritime provinces and Manitoba have taken no action in support of the plan. It is understood the Great Lakes Paper Company regards the whole proration idea as reactionary, hampering good management and companies with favorable prospects in favor of companies not so fortunate.

Ohio TAPPI to Meet

The Ohio Section of TAPPI will hold a dinner meeting at the Hotel Manchester, Middletown, Ohio, Saturday evening, November 26, 1938, at 6:30 o'clock.

The program will feature an address by Professor R. J. Van Tassel of the Psychology Department, Miami University. His subject will be "Psychological Factors in the Selection of Men" a topic which is of outstanding interest to everyone. Professor Van Tassel is widely known in industrial circles as well as academic.

The Ohio Section of TAPPI extends a cordial invitation to the executives of the paper industry, the members and friends of the Miami Valley Division of the Superintendents Association and all other mill men who are interested in this timely subject.

For dinner reservations notify J. E. Burdsall, Crystal Tissue Company, Middletown, Ohio.

Japanese Acquire Pulpwood Timber

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., November 14, 1938.—Japanese pulp interests are now completing negotiations for acquisition of 1,200 acres of pulpwood timber on Vancouver Island at Barkley Sound, on the west coast. Preliminary arrangements were made public a few months ago, and Heijior Nishi and Shigero Sakaguchi, both officials of the Karafuto Paper Pulp Company, have now arrived at Vancouver from Tokio to complete the deal. Plans for handling the timber have not yet been revealed.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING NOVEMBER 12, 1938

SUMMARY

Cigarette paper .....532 cs.
Wall paper .....14 cs.
Paper hangings .....3 bls.
Wall board .....506 bdls.
Newsprint .....2,863 rolls.
Printing paper .....79 rolls, 27 cs.
Wrapping paper .....51 bls., 839 rolls, 1 cs.
Filter paper .....2 cs.
Drawing paper .....13 cs.
Surface coated paper .....188 cs.
Surface baryta coated paper .....109 crates, 8 cs.
Basic paper .....9 cs.
Photo paper .....10 cs.
Transfer paper .....41 cs.
Parchment paper .....8 cs.
Tracing paper .....1 cs.
Tissue paper .....4 cs.
Gummed paper .....4 cs.
Colored paper .....1 cs.
Stencil paper .....1 cs.
Miscellaneous paper .....119 rolls, 36 cs.

CIGARETTE PAPER

Jay Madden Corp., *Scanstates,* Helsingfors, 157 cs.
R. J. Reynolds Tobacco Co., *Washington,* Havre, 118 cs.
Braunstein Freres, Inc., *Pr. Roosevelt,* Havre, 14 cs.
Braunstein Freres, Inc., *Normandie,* Havre, 24 cs.
H. H. Strauss, *Normandie,* Havre, 136 cs.
Champagne Paper Corp., *Normandie,* Havre, 83 cs.

WALL PAPER

——, *Washington,* Havre, 14 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Merchant,* London, 3 bls.

WALL BOARD

Blanchard Lumber Co., Inc., *Tunaholm,* Gothenburg, 506 bdls.

NEWSPRINT

National Pulp & Paper Co., Inc., *Pr. Roosevelt,* Oslo, 347 rolls.
Jay Madden Corp., *Pr. Roosevelt,* Kotka, 397 rolls.
N. Y. Evening Journal, *Pr. Roosevelt,* Kotka, 248 rolls.
International Paper Co., *G.T.D.,* Gatineau, 343 rolls.
Parsons & Whittemore, Inc., *Kersten Miles,* Sundsvall, 75 rolls.
Jay Madden Corp., *Scanstates,* Kotka, 1036 rolls.
Jay Madden Corp., *Tunaholm,* Kotka, 151 rolls.
Jay Madden Corp., *Washington,* Kotka, 266 rolls.

PRINTING PAPER

Keuffel & Esser Co., *Scythia,* Liverpool, 1 cs.
Oxford University Press, *Scythia,* Liverpool, 5 cs.
H. Reeve Angel & Co., Inc., *Tunaholm,* Kotka, 39 rolls.
Japan Paper Co., *Washington,* Havre, 7 cs.
Keuffel & Esser Co., *Washington,* Hamburg, 40 rolls.
E. Dietzgen & Co., *New York,* Hamburg, 14 cs.

WRAPPING PAPER

Jay Madden Corp., *Pr. Roosevelt,* Mantyluoto, 51 bls., 826 rolls.
Standard Products Corp., *Black Eagle,* Antwerp, 13 rolls.
Phoenix Shipping Co., *New York,* Hamburg, 1 cs.

FILTER PAPER

E. H. Sargent & Co., *Tunaholm,* Gothenburg, 1 cs.
A. Giese & Son, *New York,* Hamburg, 1 cs.

DRAWING PAPER

Devoe & Reynolds, Co., *American Merchant,* London, 5 cs.
Keuffel & Esser Co., *Washington,* Hamburg, 8 cs.

SURFACE COATED PAPER

Gevaert Co., of America, *Black Eagle,* Antwerp, 94 cs.
Gevaert Co., of America, *Pennland,* Antwerp, 94 cs. (unfinished photo-paper).

SURFACE BARYTA COATED PAPER

——, *Pennland,* Antwerp, 8 cs.
Globe Shipping Co., *New York,* Hamburg, 109 crates.

BASIC PAPER

Dingelstedt & Co., *New York,* Hamburg, 8 cs.
Globe Shipping Co., *New York,* Hamburg, 1 cs.

PHOTO PAPER

Medo Photo Supply Co., *Georgic,* Southampton, 2 cs.
American Express Co., *American Merchant,* London, 8 cs. (raw base paper).

TRANSFER PAPER

J. H. & G. B. Siebold, Inc., *Washington,* Hamburg, 41 cs.

PARCHMENT PAPER

E. Dietzgen & Co., *New York,* Hamburg, 8 cs. (imitation).

TRACING PAPER

E. Dietzgen & Co., *New York,* Hamburg, 1 cs.

TISSUE PAPER

——, *Scythia,* Liverpool, 2 cs.
Ecuadorian Panama Hat Co., *Excalibur,* Genoa, 2 cs. (caps).

GUMMED PAPER

Heemsoth Kerner Corp., *Europa,* Bremen, 4 cs.

COLORED PAPER

J. W. Hampton, Jr. Co., *Black Eagle,* Antwerp, 1 cs.

STENCIL PAPER

——, *American Merchant,* London, 1 cs.

MISCELLANEOUS PAPER

Standard Products Corp., *Pr. Roosevelt,* Havre, 7 cs.
American Express Co., *Georgic,* Southampton, 3 cs.
Chase National Bank, *Kersten Miles,* Sundsvall, 119 rolls.
Ensign Manfg. Co., *Skjelbred,* Yokohama, 10 cs.
Japan Paper Co., *Grete Maersk,* Kobe, 14 cs.
Chase National Bank, *New York,* Hamburg, 2 cs.

RAGS, BAGGINGS, ETC.

The Barrett Co., *Pr. Roosevelt,* Hamburg, 35 bls. bagging.
——, *City of Florence,* Colombo, 70 bls. rags.
Darmstadt Scott & Courtney, *Black Eagle,* Antwerp, 227 bls. bagging.
Manufacturers Trust Co., *Black Eagle,* Antwerp, 15 bls. rags.
——, *R. Maersk,* London, 89 bls. old strings.
——, *Transylvania,* Glasgow, 37 bls. new rags.
Hughes Fawcett, Inc., *Transylvania,* Glasgow, 54 bls. flax waste.
——, *American Merchant,* London, 55 bls. waste string.
Royal Manfg. Co., *H. Jaspar,* Antwerp, 98 bls. cotton waste.
——, *Scythia,* Liverpool, 108 bls. rags.
——, *Pennland,* Antwerp, 89 bls. bagging.
Irving Trust Co., *Pennland,* Antwerp, 68 bls. bagging.
——, *Vigilant,* Gdynia, 216 bls. bagging.
R. Blank, *Extavia,* Genoa, 78 bls. old cottons, 80 bls. rags.
Castle & Overton, Inc., *Extavia,* Genoa, 167 bls. rags.
W. J. Green Co., *Extavia,* Genoa, 126 bls. rags.
——, *Extavia,* Genoa, 73 bls. rags.
——, *Extavia,* Leghorn, 67 bls. rags.
American Express Co., *Black Hawk,* Rotterdam, 110 bls. rags.
Loumar Textile By Products, Inc., *Washington,* Hamburg, 155 bls. jute waste, 80 bls. bagging.
——, *Excalibur,* Beyrouth, 170 bls. rags.
——, *Excalibur,* Alexandria, 99 bls. bagging, 78 bls. old cottons, 80 bls. rags.

GLUE STOCK, ETC.

——, *Scythia,* Liverpool, 301 bags hide cuttings.
——, *New York,* Hamburg, 50 bags bone glue (sheets).

OLD ROPE

National City Bank, *American Merchant,* London, 41 coils.
Chase National Bank, *Scanstates,* Copenhagen, 235 coils.
W. Steck & Co., *Excalibur,* Marseilles, 23 bls.

CHINA CLAY

Premier Shipping Co., *Georgic,* Southampton, 200 casks.

CASEIN

———, *Southern Prince,* Buenos Ayres, 417 bags.

WOOD PULP

Bulkley Dunton Pulp Co., Inc., *Kersten Miles,* ———, 2145 bls. sulphite, 400 tons.
Bank of N. Y. Trust Co., *Kersten Miles,* Hernosand, 9000 bls. sulphite, 1500 tons.
———, *Kersten Miles,* Hernosand, 9700 bls. sulphite, 1748 tons.
M. Sone, *Kersten Miles,* Sundsvall, 300 bls. dry pulp, 50 tons.
Cellulose Sales Co., Inc., *Kersten Miles,* Sundsvall, 2535 bls. sulphite, 502 tons, 450 bls. sulphate, 75 tons.
Bank of N. Y. Trust Co., *Boden,* Hernosand, 300 bls. mechanical pulp, 600 bls. sulphite.
E. M. Sergeant Pulp & Chemical Co., *Boden,* Hernosand, 600 bls. sulphite.
Lagerloef Trading Co., *Scanstates,* Helsingfors, 737 bls. mechanically ground pulp.
Castle & Overton, Inc., *Tunaholm,* Viipuri, 2703 bls. wood pulp.
Pulp Sales Corp., *Tunaholm,* Viipuri, 2540 bls. sulphite, 2350 bls. sulphate.
Perkins Goodwin & Co., *Tunaholm,* Gothenburg 140 bls. sulphate.
J. Anderson & Co., *Tunaholm,* Gothenburg, 500 bls. sulphite, 250 bls. dry pulp.
D. M. Hicks, Inc., *Tunaholm,* Gothenburg, 450 bls. sulphite.
———, *Black Hawk,* Rotterdam, 129 bls. wood pulp, 25 tons.
Absorbo Beer Pad Co., *Washington,* Hamburg, 80 bls. wood pulp.

WOOD PULP BOARDS

———, *Tunaholm,* Viipuri, 226 rolls.
H. Fuchs & Son, *Tunaholm,* Viipuri, 80 crates.
Salwen Paper Co., *Tunaholm,* Viipuri, 97 bls.

NEWARK IMPORTS

WEEK ENDING NOVEMBER 12, 1938

———, *Boden,* Sundsvall, 202 bdls. wall board.
Perkins Goodwin & Co., *Boden,* Sundsvall, 150 bls. sulphite, 25 tons, 300 bls. sulphate, 50 tons.
Gottesman & Co., Inc., *Boden,* Sundsvall, 2400 bls. sulphate, 400 tons.
Gottesman & Co., Inc., *Boden,* Hernosand, 3300 bls. kraft pulp, 900 bls. sulphite.
Irving Trust Co., *Boden,* Hernosand, 600 bls. sulphite.

ALBANY IMPORTS

WEEK ENDING NOVEMBER 12, 1938

Bank of N. Y. Trust Co., *Boden,* Hernosand, 12960 bls. kraft pulp, 900 bls. sulphite.
Gottesman & Co., Inc., *Boden,* Hernosand, 4200 bls. sulphite.
E. M. Sergeant Pulp & Chemical Co., *Boden,* Hernosand, 1200 bls. sulphite.

PORTLAND IMPORTS

WEEK ENDING NOVEMBER 12, 1938

Parsons & Whittemore, Inc., *Waukegan,* ———, 667 bls. wood pulp.
Gottesman & Co., Inc., *Svanhild,* Sweden, 2500 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING NOVEMBER 12, 1938

English China Sales Co., *Toronto City,* Fowey, 2050 tons china clay.
Moore & Munger, *Toronto City,* Fowey, 202 tons china clay.
R. C. Harvey Co., *Black Eagle,* Rotterdam, 7 bls. tagging.
E. J. Keller Co., Inc., *Black Eagle,* ———, 99 bls. rags.
Hughes Fawcett, Inc., *Black Eagle,* Antwerp, 80 bls. rayon waste.
———, *Black Eagle,* Antwerp, 152 bls. rags.
T. D. Downing & Co., *Black Eagle,* Antwerp, 54 bls. rags.
American Express Co., *Black Eagle,* Antwerp, 4 cs. stencil paper.
Parsons & Whittemore, Inc., *Konigsberg,* ———, 1125 bls. wood pulp.

NEW LONDON IMPORTS

WEEK ENDING NOVEMBER 12, 1938

Gottesman & Co., Inc., *Svanhild,* Sweden, 4000 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING NOVEMBER 12, 1938

Drueding Bros., Co., *Extavia,* Genoa, 10 cs. tissue paper caps.
N. Snellenburg & Co., *Extavia,* Leghorn, 3 cs. paper.
Neidich Process Co., *Tunaholm,* Helsingfors, 29 bbls. tissue paper.
J. W. Hampton, Jr., Co., *Tunaholm,* Kotka, 278 rolls newsprint.
Pulp Sales Corp., *Tunaholm,* Kotka, 185 bls. sulphite.
Perkins Goodwin & Co., *Tunaholm,* Stockholm, 600 bls. sulphite.
———, *Tunaholm,* Stockholm, 120 bls. sulphite.
The Borregaard Co., Inc., *Tunaholm,* Gothenburg, 84 rolls, 94 bls. paper.
Perkins Goodwin & Co., *Tunaholm,* Gothenburg, 558 bls. sulphate.
Johaneson Wales & Sparre, Inc., *Tunaholm,* Gothenburg, 175 bls. sulphate.
Blanchard Lumber Co., *Tunaholm,* Gothenburg, 1419 bdls. wall board.
Castle & Overton, Inc., *Black Hawk,* Rotterdam, 150 bls. wood pulp.
Parsons & Whittemore, Inc., *Milos,* ———, 2625 bls. wood pulp.

WILMINGTON IMPORTS

WEEK ENDING NOVEMBER 12, 1938

Pagel Horton & Co., Inc., *Milos,* Sweden, 3000 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING NOVEMBER 12, 1938

Jay Madden Corp., *Scanstates,* Kotka, 831 rolls newsprint.
Lagerloef Trading Co., *Scanstates,* Helsingfors, 520 bls. mechanically ground pulp, 104 tons.
Pulp Sales Corp., *Tunaholm,* Viipuri, 2950 bls. sulphite, 31 bls. sulphate.
Pulp Sales Corp., *Tunaholm,* Kirkkoniemi, 2805 bls. sulphate.
Jay Madden Corp., *Tunaholm,* Kotka, 513 rolls newsprint.
F. H. Shallus Co., *Tunaholm,* Kotka, 97 rolls newsprint.
Scripps Howard Supply Co., Inc., *Tunaholm,* Kotka, 81 rolls newsprint.
Pulp Sales Corp., *Tunaholm,* Kotka, 3781 bls. sulphite.
———, *Tunaholm,* Gothenburg, 270 bls. sulphite.
Perkins Goodwin & Co., *Tunaholm,* Gothenburg, 558 bls. sulphite.
———, *Tunaholm,* Stockholm, 210 bls. sulphite.
Bulkley Dunton Pulp Co., Inc., *Tunaholm,* ———, 600 bls. sulphite.
———, *Tunaholm,* Gothenburg, 300 bls. dry chemical pulp.
Blanchard Lumber Co., *Tunaholm,* Gothenburg, 277 bdls. wall board.
Currier Lumber Co., *Tunaholm,* Gothenburg, 295 bdls. wall board.
Pease Woodwork Co., *Tunaholm,* Gothenburg, 207 bdls. wall board.

NORFOLK IMPORTS

WEEK ENDING NOVEMBER 12, 1938

Mead Sales Co., Inc., *Kersten Miles,* Sundsvall, 6225 bls. sulphate, 1100 tons.
Pulp Sales Corp., *Scanstates,* Wiborg, 2286 bls. sulphate, 457 tons, 270 bls. sulphite, 54 tons.
Pulp Sales Corp., *Scanstates,* Kotka, 750 bls. sulphate, 150 tons, 998 bls. sulphite, 166 tons.
W. M. Stone Co., *Scanstates,* Kotka, 134 rolls newsprint.
Old Dominion Paper Co., Inc., *Scanstates,* Kotka, 85 rolls newsprint.
Darmstadt Scott & Courtney, *Scanstates,* Gdynia, 142 bls. rags.

NEW ORLEANS IMPORTS

WEEK ENDING NOVEMBER 12, 1938

Brown Bros., Harriman & Co., *Vigilant,* Gdynia, 1050 bls. wood pulp, 105 tons.

HOUSTON IMPORTS

WEEK ENDING NOVEMBER 12, 1938

———, *Vigilant,* Gdynia, 70 bls. rags.

MONTREAL IMPORTS

WEEK ENDING NOVEMBER 12, 1938

Pagel Horton & Co., Inc., *Vera,* Sweden, 10819 bls. wood pulp.

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Liquid Chlorine

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BLEACHED SULPHITE AND SODA PULP
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Charleston, South Carolina

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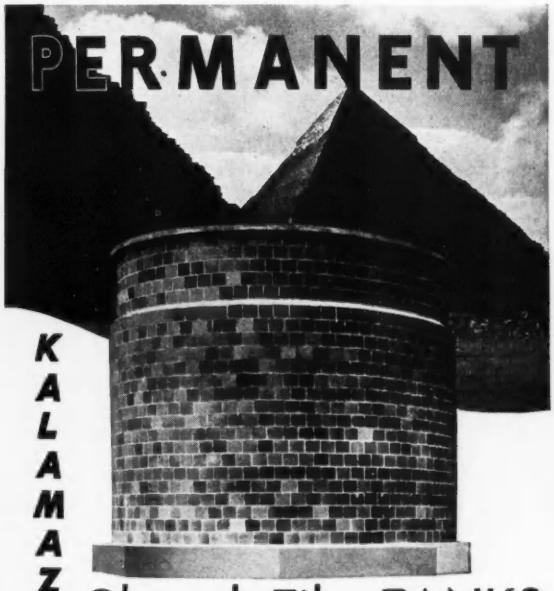

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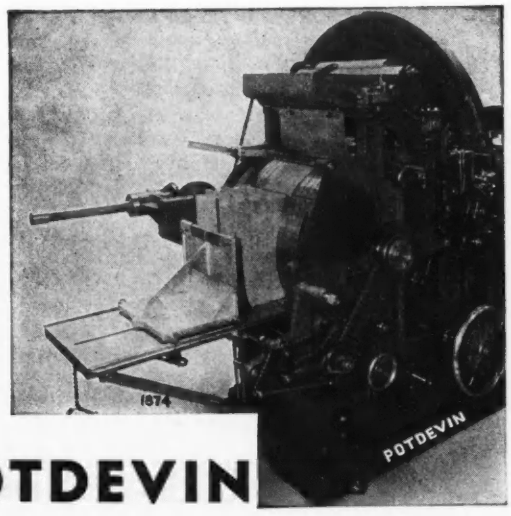

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Every bag maker knows that change-over from one size to another consumes valuable minutes, even hours each day.

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, November 16, 1938.

Little change in the wholesale market situation has been reported for this week. Improvement in the consumer demand for some grades of paper continues, while little change is reported in other grades. The trend of many kinds of consumer goods, including paper, continues upward. The index of general business activity is a little higher for the current week and now stands at 89.5 per cent, compared with 93 per cent for the corresponding week last year. The production ratio of over 200 paper mills is down to an estimated 77.4 per cent for the week ended November 5; paper board production down to 68 per cent. The ratio for paper, however, is much higher than for the corresponding week in 1937, when the ratio of over 200 paper mills was 65.3 per cent.

The newsprint situation is viewed as encouraging, as demand continues to improve and prices remain firm at from $48 to $50 per ton. Because of the $2 cut by Great Northern under the announced price of International Paper and other mills, a two-price situation in newsprint is expected to continue during 1939, as it has been in effect this year.

The uptrend in demand for many grades of sulphite paper continues this week. The Hammermill reduction in prices of sulphite bonds and mimeograph papers has resulted in a general reduction in these grades of paper. The reduction has been passed on to resale prices and the popular grade of sulphite bond or No. 4 is now quoted for resale at from $6.45 to $7.75, with corresponding reductions in the four grades of ledger papers.

The demand for some grades of book paper reflects some improvement this week, although coated papers apparently remain little changed. Less optimism is reported in the tissue paper market, which is viewed as rather soft, though production and distribution continues at a fair rate and prices remain unchanged.

The demand for kraft paper continues good and production is upward with orders well balanced against output. Reduction in the prices of some grades of kraft, notably in the heavier quality grade used for cement bags, is the cause of some concern in the market but, as yet, the prices of kraft wrapping paper remain unchanged at prevailing prices.

The board market reports demand as moderately good and production at a fairly good rate of capacity. The outlook is quite generally considered in the trade as encouraging for the future. Prices are not very firm but continue unchanging at prevailing levels.

Mechanical Pulp

No change in either demand or prices is reported in mechanical pulp for the current week. The outlook is generally regarded as encouraging in the trade and a gradual improvement is looked for in the near future.

Chemical Pulp

The demand for chemical pulp continues to slowly improve. Quotations remain relatively firm with no changes from prevailing representative quoted market prices reported this week. A considerable quantity of pulp continues to be reported in storage and until this supply on hand is further reduced only a gradual improvement in mill demand is expected.

Old Rope and Bagging

Prices continue relatively steady in old rope and are unchanged. The demand for old bagging, excepting the roofing grades, is under expectations, with no important change in prices reported.

Rags

The demand for all grades of new and old domestic rags is reported as rather less than for the preceding week. Prices hold steady. The higher grades of roofing rags continue active and prices for No. 1 and No. 2 roofing rags are higher for the week; No. 1 being quoted at from 1.20 to 1.30, and No. 2 at from 1.00 to 1.05, f.o.b., New York. The foreign rag market continues inactive at nominal prices.

Old Waste Paper

No important change in the market situation for any grade of old waste paper is reported this week. Prices are generally regarded as low but mill buying continues in relatively low volume at prevailing price levels.

Twine

A better feeling is reported in the twine market for this week. Prices remain quite firm and the only change reported in soft fiber twine are higher quotations on cotton, which is currently quoted at from .17 to .22 cents. Higher prices are also reported on some grades of hard fiber twines; medium Java now being quoted at from .10 to .16 cents, and Mexican Sisal at from .09 to .15 cents, f.o.b., mill.

To Represent Greene, Tweed & Co.

Hewitt M. Heninger, Beechwood Apts., Beech street, South, Birmingham, Ala., has been appointed southern representative by Greene, Tweed & Co., 109 Duane street, New York, manufacturers of "Palmetto" and other well known brands of lubricated mechanical packings.

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All kinds and styles of Felts for all kinds and styles of Papers.

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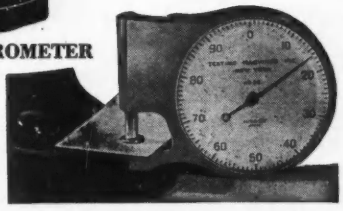

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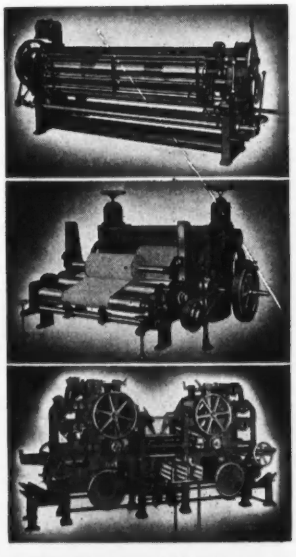

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WOOD PULP AGENTS

PRICE & PIERCE, Ltd.,

60 EAST 42nd ST.

NEW YORK

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, November 16, 1938.

ALUM (ACTIVATED)—Quotations on activated alum remain firm and unchanged from prevailing market levels. The commercial grades are quoted at $.90 per 100 pounds. in 100 pound multi-wall bags, carload quantities, f.o.b., works.

BLANC FIXE—The prices of blanc fixe continue firm and unchanged at representative market quotations. The pulp is offered at from $42.50 to $45 per ton, in bulk; the powder is quoted at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Quotations on bleaching powder continue firm and conform to prevailing market prices. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein is reported as moderate for the current week. Standard domestic ground, 20-30 mesh, is quoted at from 8½ to 9 cents per pound; 80-100 mesh at 9 cents per pound; all prices in bags, car lot quantities.

CAUSTIC SODA—Quotations on caustic soda continue firm and conform to prevailing market prices. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—The prices of china clay are firm and unchanged at prevailing market levels. Domestic filler clay is quoted at from $6.50 to $12 per ton; coating clay at from $11 to $12 per ton, at mines. Imported clay is quoted at from $14.50 to $25 per ton, ship side.

CHLORINE—Quotations on chlorine remain firm and conform to prevailing market prices. Chlorine is quoted at $2.15 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The demand for rosin continues to be reported as fair. "G" gum rosin is quoted at $5.15; "FF" wood rosin at $4.92 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is quoted at $2.80 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Prices of salt cake continue firm under a good demand and are unchanged at prevailing market quotations. Prices range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is quoted at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Quotations on soda ash are firm and conform to prevailing market prices. Quotations on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90 in bags, $1.05; and in barrels, $1.35.

STARCH—The corn starch market is reported as relatively firm for this week. Globe pearl is quoted at $2.40 per 100 pounds, in bags, and at $2.65 in barrels. Special paper starch is quoted at $2.50 per 100 pounds, in bags, and at $2.75 in barrels; all prices in car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina remain firm and continue unchanged at representative quoted market prices. The commercial grades are quoted at $1.15; iron free at $1.30 per 100 pounds, in barrels, car lot quantities, f.o.b., works.

SULPHUR—The demand for sulphur continues good and prices are firm. Annual contracts are quoted at $16 per long ton, f.o.b., cars at mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and conform to prevailing market levels. Domestic talc is quoted at from $15 to $18 per ton, Eastern mines. Imported talc is quoted at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—

Roll, contract	$56.00	@	—
Sheets	58.00	@	—

Kraft—per cwt.—Delivered Zone A

No. 1 Northern	$4.75	@	$5.25
Superstandard	4.12½	@	4.62½
Northern Standard Wrapping	4.00	@	—
Standard Wrapping	3.50	@	—

Tissues—Per Ream—Carlots

White No. 1	.92½	@	—
White No. 1 M. G.	.90	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.75	@	—
Colored	.87½	@	—
Kraft	.75	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	3.20	@	—
Bleached Toilet	5.26	@	—

Paper Towels—

Unbleached	1.80	@	—
Bleached	2.10	@	—

Manila—per cwt.—C. l. f. a.

No. 1 Jute	8.25	@	9.75
No. 2 Jute	7.50	@	9.00
No. 1 Manila Wrapping, 35 lb.	5.00	@	—
No. 2 Manila Wrapping, 35 lb.	4.75	@	—

Boards, per ton—

News	27.50	@	30.00
Chip	27.50	@	30.00
Sgl. Mla. Ll. Chip	42.50	@	—
Jute Lined Chip	42.50	@	45.00
White Pat. Coated	55.00	@	57.50
Kraft Liners	42.50	@	50.00
Binders Boards	71.00	@	77.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1.	$39.10@$46.00	$40.25@$47.25
100% Rag	31.05@ 36.50	32.20@ 37.75
85% Rag	.....	29.90@ 35.00
75% Rag	23.60@ 27.75	24.75@ 29.00
65% Rag	.....	21.65@ 26.25
50% Rag	17.55@ 21.50	18.70@ 22.75
25% Rag	14.65@ 17.75	15.80@ 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$8.20@$10.00	$9.35@$11.50
No. 2	7.30@ 9.00	8.50@ 10.25
No. 4	6.45@ 7.75	7.60@ 9.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$10.80	@	$12.50
No. 2 Glossy Coated	9.25	@	10.75
No. 3 Glossy Coated	8.15	@	9.50
No. 4 Glossy Coated	7.65	@	9.00
No. 1 Antique (watermarked)	7.65	@	9.00
No. 2 Offset	7.00	@	8.25
A Grade E. F.	6.80	@	8.00
A Grade S. & S. C.	7.05	@	8.25
B Grade E. F.	6.25	@	7.50
B Grade S. & S. C.	6.50	@	7.75
C Grade E. F.	6.00	@	7.00
C Grade S. & S. C.	6.25	@	7.25
D Grade E. F.	5.70	@	6.75
D Grade S. & S. C.	5.95	@	7.00

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—

Moist	25.00	@	28.00
Dry	25.00	@	28.00

(Delivered)

No. 1 Domestic and Canadian	29.00	@	33.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—

Prime Bleached Sulphite	2.35	@	2.75
Prime Qualities—Easy-Bleaching Sulphite	1.90	@	2.10
Strong Unbleached Sulphite	1.80	@	2.00

(On Dock, Atlantic Ports)

Kraft Bleached	2.50	@	2.75
Kraft Light & Strong	1.90	@	2.00
Kraft No. 1	1.65	@	1.85
Kraft No. 2	1.50	@	1.65

(F. o. b. Pulp Mill)

Kraft Domestic	1.50	@	1.90

(Delivered)

Soda Bleached	2.55	@	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—

New White, No. 1.	6.75	@	7.00
Silesias No. 1	4.00	@	4.25
New Unbleached	6.75	@	7.00
Blue Overall	5.25	@	5.50
Fancy	2.10	@	2.25
Washables	1.60	@	1.70
Mixed Khaki Cuttings	3.25	@	3.75
O. D. Khaki Cuttings	4.00		4.25

Old Rags

White, No. 1—

Repacked	3.15	@	3.40
Miscellaneous	2.60	@	2.75

White, No. 2—

Repacked	1.90	@	2.10
Miscellaneous	1.50	@	1.60

Thirds and Blues—

Repacked	1.40	@	1.50
Miscellaneous	1.25	@	1.30

Roofing Rags—

No. 1	1.20	@	1.30
No. 2	1.00	@	1.05
No. 3 (bagging)	.85	@	.90
No. 4	.65	@	.70
No. 5A	.65	@	.70

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	—

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IMPORTED **DOMESTIC**

DOMESTIC—TALC AND WHITING

Pure Titanium Dioxide

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a New Development

giving maximum suspension and dispersion in water, assuring high efficiency and value.

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Manufactured by
American Zirconium Corporation
Baltimore, Maryland

Mundt

Perforated Screens For Pulp and Paper Mills

Steel, Copper, Brass Bronze, Monel Metal and Other Alloys Punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

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CHEMIPULP PROCESS INC.

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Chemical Pulping Processes ☆ Operating Surveys
Appraisals ☆ Estimates

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3311 FIRST AVENUE SOUTH, SEATTLE, WASH.

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403 Crescent Building, Montreal, Quebec

LEATHER BELTS

FOR 60 YEARS SPECIALISTS TO THE PAPER MILLS—
Oil and water resistant belts that will save you money in the long run. ¶ Since 1876 we have been supplying the industry direct from our own tanneries.

Write Barnes for better belts.
37 Batterymarch St. Boston, Mass.

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons.	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.40	@	2.50
Domestic	2.25	@	2.35
Wool Tares, light...	1.80	@	1.90
Wool Tares, heavy...	1.90	@	2.00
Bright Bagging.....	1.70	@	1.80
Manila Rope—			
Foreign	2.90	@	3.00
Domestic	2.50	@	2.75
Jute Threads.....	2.75	@	3.00
Sisal Strings.....	1.50	@	1.60
Mixed Strings.....	.60	@	.70

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.65	@	2.70
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.75	@	1.80
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag.....	.70	@	.75
Solid Flat Book...	.60	@	.65
Crumbled No. 1...	.40	@	.45
Ledger Stock White.	1.15	@	1.25
Ledger Stock Colored	.65	@	.70
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut.....	1.40	@	1.50
New Cuttings.....	1.25	@	1.35
Old Kraft Machine— Compressed bales..	.65	@	.75
News—			
No. 1 White News	1.35	@	1.40
Strictly Overissue..	.50	@	.55
Strictly Folded....	.30	@	.35
No. 1 Mixed Paper..	.15	@	.20

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.11	@	.13
White Hemp.....	.12	@	.14
Fine Polished—			
Fine India.....	.15	@	.17
Unpolished—			
Box	.08½	@	—
Paper Makers.....	.07½	@	.08½
Tube Rope.....	.09	@	.10
Wall Paper.....	.10	@	.11
Wrapping	.11	@	.13
Soft Fiber Rope...	.09½	@	.11½
Cotton	.17	@	.22

(Hard Fiber)

Medium Java.....	.10	@	.16
Mex. Sisal.....	.09	@	.15
Manila	.18	@	.25
Domestic	2.65	@	2.75
Sisal Rope.....	1.65	@	1.85
Mixed Rope.....	.50	@	.75
Transmission Rope...	1.90	@	2.00
Soft Jute Ropes....	1.85	@	2.00
Jute Carpet Threads.	.75	@	.90
Gunny Bagging—			
Foreign	2.25	@	—
Domestic	2.00	@	—
Bleachery Burlap....	3.25	@	3.62½
Scrap Burlap—			
Foreign	1.65	@	1.85
Domestic	1.40	@	1.55
Scrap Sisal.....	1.25	@	1.50
Scrap Sisal for Shredding	1.75	@	1.90
Wool Tares, Heavy..	1.65	@	1.85
New Burlap Cuttings	2.00	@	2.25
Aust. Wool Pouches.	2.75	@	3.25
Heavy baling bagging	1.85	@	2.00
Paper Mill Bagging..	1.00	@	1.15
No. 2 Bagging.....	.55	@	.75

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1...	.06¾	@	.07
New Light Flannelettes	.04¼	@	.04¾
Silesias No. 1.....	.04¼	@	.04½
New Black Silesias..	.03¾	@	.04
Silesias No. 1			
Soft Unbleached.....	6.50	@	7.00
Blue Cheviots.....	.05	@	.05¼
Fancy	.03	@	.03¼
Washable	.02¾	@	.03
Cottons—According to grades—			
Blue Overalls.....	.04¾	@	.05
New Black, soft...	.03¾	@	.04
Khaki Cuttings....	.03¼	@	.03½
O. D. Khaki.....	.04	@	.04½
Corduroy	.02½	@	.03
New Canvas.....	.06¾	@	.07½
B.V.D. Cuttings.....	—	@	.06½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	1.05	@	1.15
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.25	@	2.50
Old Linsey Garments	2.20	@	2.25
New Silesias.....	4.75	@	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.06	@	.06¼
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04	@	.04½
Cottons—Acording to grades—			
Washable No. 2...	.01	@	.01¼
New Blue.....	.01	@	.01¼
Fancy Percales....	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.25
Miscellaneous	2.50	@	2.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	.95
Domestic No. 1...	—	@	.95
Domestic No. 2...	—	@	.85
Roofing Bagging..	—	@	.60

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.75	@	2.00
Domestic	1.50	@	1.75
Manila Rope.....	2.75	@	3.00
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.50
No. 2.....	1.00	@	1.25
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.75	@	1.00
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.25	@	2.30
No. 2 Hard White.	1.90	@	2.00
No. 1 Soft White..	1.75	@	1.80
No. 2 Soft White..	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.15	@	1.20
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy..	.60	@	.75
Manila Cuttings.....	1.45	@	1.50
Print Manila.....	.40	@	.45
Container Manila....	.35	@	.40
Kraft Paper.....	.75	@	.80
No. 1 Mixed Paper..	.20	@	.25
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.40	@	.45
Old Newspapers.....	.35	@	.40

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White..	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light..	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.85	@	2.00
Manila Envelope Cuttings, extra quality.	2.00	@	2.10
No. 1 Old Manila...	.80	@	.90
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.90	@	—
Mixed Papers.....	.15	@	—
Print Manila.....	.45	@	.55
Container Manilas...	.27½	@	—
Old Newspapers.....	.25	@	.32½
Paper Wool Strings..	.65	@	.75
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Kraft corrugated boxes	.70	@	—
Kraft corrugated boxes	.65	@	.70
Screening Wrappers..	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.85	@	2.90

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.45	@	.50
Blanks	.90	@	—
Krafts	.45	@	.50
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila.....	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.25	@	.30
No. 1 Mixed Paper	.15	@	.30
Roofing Stocks—			
No. 1.....	1.00	@	1.05
No. 2.....	.85	@	—

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White.....	.36½	@	—
No. 1 Tints.....	.37½	@	—
No. 2 White.....	.26½	@	—
No. 2 Tints.....	.27½	@	—
No. 4 White.....	15.50	@	16.50
No. 4 Tints.....	16.50	@	—
No. 5 Bond—White.	11.25	@	—
No. 5 Bond—Tints..	12.25	@	—
No. 5 Bond—Golden Rod	12.75	@	—
No. 5 Ledger—White.	11.25	@	—
No. 5 Ledger—Tints.	11.25	@	—
No. 6 Bond—White..	10.15	@	—
No. 6 Bond—Tints..	10.65	@	—
No. 6 Bond—Golden Rod	12.15	@	—
No. 7 Bond—White.	8.50	@	—
No. 7 Bond—Tints..	9.00	@	—
No. 7 Bond—Golden Rod	10.50	@	—
Book—			
No. 1 M. F.....	7.35	@	—
No. 2 M. F.....	6.85	@	—
No. 3 M. F.....	5.60	@	—
No. 1 S. C.....	7.60	@	—
No. 2 S. C.....	7.10	@	—
No. 3 S. C.....	6.10	@	6.35
No. 1 Coated Book and Litho.....	12.50	@	—
No. 2 Coated Book and Litho.....	11.00	@	—
No. 3 Coated Book and Litho.....	10.00	@	—
Coated tinted.....	13.50	@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.....	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)...	46.00	@	—
Sheets	54.00	@	—

Pulp

Ground wood.....	29.00	@	—
Unbleached Sulphite.	49.00	@	—
Kraft	50.00	@	—
Soda	54.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.25	@	—
Soft White.....	2.15	@	—
White Blk. News..	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.80	@	—
Light and Crumpled Book Stock.	.70	@	—
Ledgers and Writings	1.10	@	—
Manilas—			
New Manila Cut..	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue..	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to Mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06¾	@	.07
Fancy Shirt Cuttings	.02¼	@	.02½